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THE ANNALS OF THE HITOTSUBASHI ACADEMY

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EVALUATION OF THE JAPANESE ECONOMY

By ICHIRO NAKAYAMA

Professor of Economics

I. *Nucleus of the Problem*

It is more difficult than appears at the first glance to draw characteristically a living picture of a national economy. The causes of this difficulty are manifold, but the more important are the following three:

1. In economic matters, the evaluation even of actual conditions presents considerable difficulty.
2. To determine the various characteristics in them is a new task.
3. Future perspectives or policy-conscious ideas are liable to be confounded by facts.

Taking the first point, no one will dispute that the grasping of actual conditions is a difficult task, from the viewpoint that much remains to be done in the field of analytical and theoretical study in economic science, notwithstanding the advance that has taken place up to this day. To be sure, as will be stated later, great progress has been experienced in the study of theories. Statistics to explain actualities have been amassed, and the art of arranging them has seen a remarkable advance. But the mere amassing of data is not equivalent to the grasping of economic movements in life. Some thirty years ago, when Wesley C. Mitchell and others first advocated and pushed forward a statistical and positive study of business fluctuations, he remarked, pointing out the difference of a weather forecast and a business forecast, that while the weatherman can tell accurately at least whether it is fine or cloudy or raining at that instant, in forecasting business trends, the very fact whether present business is going well or not is sure to be controversial. During the lapse of thirty years, progress in these matters has been achieved to a certain extent. However, when we ponder over the substance of what gave birth to controversies then, it may be said that there are enough reasons for the persistence of difficulties in dealing with business movements or economic dynamics, and that such difficulties cannot be put aside as a technical matter.

One of the reasons which complicates comprehension is due to the divergence of time at which a problem is contemplated. When speaking of the present, what stretch of time comes into view? Does it mean a short-range observation or a long-range one? And compared with the present, what period of time and what length of time shall be considered? For instance, supposing we adopt Schumpeter's theory that the waves of business movements are composed of the sum total of three waves consisting of Kondratief's 60-year major cycle, Jugler's 11-year cycle and Kichin's 40-months cycle, it may happen that a certain present is simultaneously located on the downward course in Kondratief's cycle, and on the upward course in Kichin's cycle. In such case, whether the observer's eye turns to the long-period cycle or the short-period cycle, different answers will naturally result to the same problem. The second reason is a more important one, that since all economic activities are based upon future perspectives, problems of the future necessarily creep into observations in evaluating the present. In other words, different pictures will be drawn of the present depending upon whether the observer sees the future in rosy colors or in darker hues. This explains, and there is no wonder, why the catchword theory of "Japan under the economic crisis" has persistently been able to recruit its advocates, regardless of how far and long her economy has shifted from an inflation to a deflation course. Leaving what kind of eye-glasses is to be used in this case to a later discussion when the third point is taken up, we must say that even the task to grasp actual conditions, pregnant as they are with future issues, is bound to be no easy matter.

To come to the second point, difficulties of a similar nature entail the grasping of characteristics, too. Characteristics in outward economic conditions, such as large population, narrow territory and diversified climate, may be amenable to evaluation in the way the facial contour is. But generally speaking, when we come to the inner phase of economic movements, such as the way money does its work, how capital is accumulated, and the reaction to changes of outward conditions, they are not easily grasped. The characteristics we thought we grasped as such may sometimes turn out to be no such characteristics, or else, even if they were, they may be found not functioning at all. The situation can be compared to the difference in the evaluation of realities between a talented artist and a poor hand.

The situations which give rise to the difficulty under the second point are, roughly speaking, similar to those of the first point. Factors consisting of the problem of time, and especially the problem how the time factor of the future may be taken in, will exercise a powerful influence on the grasping of characteristics. Attention must also be paid to the fact that a new cause emphasizing such situations is added. This is the difference in the way of presenting the problem according to where the economic problem lies. Where there is no problem, there is no evaluation. This is clear enough. Only, when the facts are of an economic-social nature, they operate so vigorously as to affect even the most trifling details of the evaluation of actual conditions. Discussion of this issue now leads us to the third point.

Ideological doctrines or wishful perspectives, or sometimes more definite ideas on policies for the future, are liable to fuse into and affect the evaluation of present actualities, and this confusion obliterates the demarcation between science and non-science. This is so thoroughly discussed in the initial stage of the epistemology of science, that repetition is needless here. Speaking mainly about the objective evaluation of present actualities, it is sufficient to point out that, admitting that ideology sometimes a starting point and in many cases prompts the right one, ideology alone does not achieve its object after all. In regard to wishful perspectives, they must be deprecated in scientific reasoning as much as possible insofar as they belong to a speculation purely subjective as the term suggests. As for policy-conscious ideas, though it will be as difficult as for ideology, to completely escape from the influence of their objectives, conversely their divergence from actual facts should emphatically be pointed out, for accord in interpreting actualities does not always mean accord in policies to amend them.

In short, situations that render difficult the evaluation of economic actualities, and especially the grasping of their characteristics, are more complicated than seen at first sight and cannot be coped with in a simple way. Even in regard to each of the foregoing three points, the basic method of speculation is open to criticisms and, even if not, things considered "possible" in abstract speculation may sometimes turn out to be not possible in practice upon analysis and evaluation of actualities. To exaggerate, difficulties envisaged here are, as stated earlier, inherent in economics and will in that very sense remain problems forever. This must be kept in mind for, when forgotten, unnecessary confusion in the methods of evaluating peculiarities will occur.

The use of the expression, "problems for ever", should not be taken to suggest giving up these problems, nor that until these basic problems have been solved one cannot draw the visage of the Japanese economy.

On the contrary, firstly, the general tendency to economic planning, intensified through the experiences of the war, requires more than ever that the characteristics of the national economy should be clarified. In the case of the Japanese economy, the necessity of knowing its specific position in the world economy when it will be restored to form a link in it, is growing. Secondly, the solution of the basic problems pointed out above will be promoted through the development of a method of concrete evaluation. There is, of course, an important difference between a theoretical and practical method of solving problems. In natural science where, after a theoretical solution is achieved, it is applied in a practical way to work out a solution of concrete problems, this difference is most outstanding. In the case of social science, however, where experiments cannot be utilized forthwith as in natural science, the process is not so simple. Controlled economy may turn out to be an experiment which will never be repeated, yet from experiences of economic control or planning, clues to a solution of fundamental problems may surely be found. In this very sense, the system set up for a practical purpose to clarify characteristics, or the demonstration which develops from it, serves at the same time for the solution of fundamental problems. Methods proposed for economics have grown up in this way. Those proposed for economic analysis cover a number of schools, some extremely abstract and others extremely concrete. But the problem underlying all these apparently different methods is one. The reason why the fundamental difficulty underlying the method of evaluation has been discussed at the head of the present essay is to clearly point this out.

II. *Two Ways of Evaluation*

The way to evaluate an economy is the method by which to understand an economy. When we discuss the evaluation of characteristics, something more concrete is meant, but there is no difference whatever in the substance of the problem. When characteristics concern outward economic factors, as for instance, the size of population of an area or territory, their evaluation and a knowledge of the economy itself may be looked upon from different planes. There were times when that way of evaluation passed as legitimate. But it is not the characteristics in a static economy, but in its dynamic process, that matters here. In that case attention will be concentrated mainly on the internal movements of the economy, and even in the case external data are looked for, emphasis must be laid on the co-relationship between changes in data and the adaptation of the economy to the former. Looking back on the history of economic science, one will find how the way to understand economy and, accordingly, the way to evaluate its characteristics have been pushed ahead along this line. In this way, insofar as we seize problems on the plane where present-time economics stands, the problem is how to grasp economy which calls for digging deep into the innermost core of the theoretical system of today.

Based on the present level of economics, we perceive there are two different ways to grasp an economy. One is to understand all economic changes by means of changes in the system of principal variables in economic matters, represented by the positions taken by classical or neo-classical economists from Alfred Marshall down to A. C. Pigou. The other is the analyzing of national income, represented by the position of the so-called "New Economics" school (Harris) since John M. Keynes. The meaning of the former viewpoint will be immediately made clear if we substitute "the system of principal variables" with wages, prices and interest rates. Wages, prices and interest rates are generally nothing else than the monetary expression of relative values. The classical economists tried to explain the laws of economic changes through the instrumentality of changes in these systems of relative values. They say all changes of wage rates; all changes in the demand-supply relationship of products reflect themselves finally in prices; changes like equilibrium or disequilibrium in the demand and supply of money, or therefore capital, reflect themselves in changing rates of interest. Thus, if one can get hold of the movements of the factor of production (labor) by means of wages, see the flow and ebb of products by means of prices, and catch the process of capital accumulation by the trend of interest rates, the laws of basic movements of economy can be grasped through the movements of principal variables.

I once gave these principal variables the name of parameters. (By the way, Professor Shigeto Tsuru in his recent book, *National Income and Reproduction*, in Japanese, Tokyo, 1951, mentions barometers by which he means nearly the same.) For example, while wages as a parameter are said to be directly governed by the demand-supply relationships of labor, factors that influence the demand and the supply are numberless. It is almost needless to point out that the movements of population, changes in age structure, changes in occupation, changes in industrial structure, migrations, labor law reforms, the behavior of labor movements, social customs, ethical ideas toward labor, and any and every item conceivable affect the supply of labor. All these factors, in relation to the problems facing us, are respectively factors constituting the peculiarities of a national economy. If changes in these factors are reflected in the parameters and these parameters are so constructed that changes can be read from them by being organized into one mutually dependent system —— this is the basic idea on which the equilibrium theory stands in its primitive form, —— the theory of parameters will be the clearest method of grasping an economy.

To indicate that this viewpoint developed at a time when economics was born in England, we termed this theory "classical". But this is not a mere theory of the past. When, for example, it is explained that the fall in day-laborers wages in Japan's agriculture last year was due to an excess of labor supply caused by a migratory movement to farms, and that the fall in the price of iron and steel in March 1951 was a reflection of the price decline of the same commodity in overseas markets, the classical method of interpreting economic movements fully justifies itself and there is ample reason why this method should continue as a necessary foundation of economic theory. This is the more essential as modern economic theories and even the Marxian economics are drawing heavily from this ancient source. Thesse classical theories are, of course, not the sole source for the study of economics today, and we do not deny that there have been a number of variations from the positions held before. What is important is that they play a very vital role as a method of evaluation of an economy.

The second method by means of national income dates back to Keynes' *General Theory* (London, 1936). Analysis in Gardner C. Means, *The Structure of the American Economy* (Washington, 1939), the analytical study of industrial structure by W. Leontief, and that of national income in the White Paper of the British Government, which latter attracted attention during the war, while each differing in detail and emphasis, had much in common in not contenting themselves with the so-called price-analysis, but in attempting to take one step closer toward matters more real and more structural. Arguments have already been raised against the price-analysis method or the analysis by the parameter system. Though the prestige of the method invented and expanded by the classical school still finds its place in contemporary economics, its superficial way of evaluation, its relative way of seeing things, and the way of grasping economic matters from what Dr. Shinshichi Miura termed "the nominalistic standpoint in English thought", was the target of criticisms levelled even by followers of the classical school. When Pigou in 1920 under the title of *Economics of Welfare* (1 ed., London, 1920) advocated a turn "from price-analysis to income-analysis", he had raised the first voice for the analysis of national income as we understand it today.

The method by means of national incomes, which we take up here as a second method alongside that by parameters, dates back to Keynes. Indeed, the notion of collective economy in contrast to the viewpoint of individual economy, the concept of the whole in contrast to the concept of each, the income analysis in contrast to price-analysis, and other necessary ways to grasp economy through national income, has been moulded and tempered by Keynes and a good number of Keynesians. It was since Keynes, too, that these weapons in combination with statistical data were developed quantitatively. The ease with which the Keynesian concept of the whole can be combined with statistical figures throws a light never known before on the problem of characterizing a national economy, which is our subject matter, and this is why the second method has been adopted. We do not, of course, suggest that therefore this is the only way for the positive study of modern economy. For a while, it looked as if it were antagonistic to the first method, this being the fate common to every new theory, but at present, the new theory is with reason interpreted as the necessary development of the former.

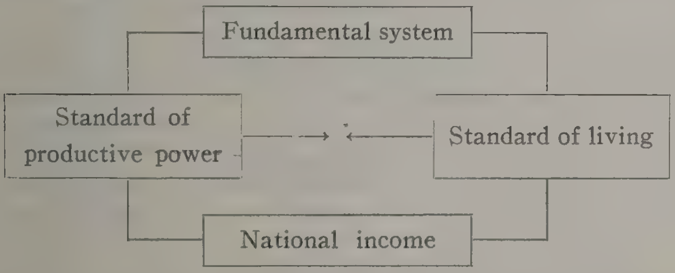
Endless discussions will ensue if we enter into the details of the first and second methods or ways of thinking, and many problems remain to be solved as regards their interrelation. We shall not deal with these issues here, but merely point out that these two are the only basic methods that contemporary economics has deviced. The problem is how to combine them for the evaluation of the Japanese economy. Speaking conclusively, as the development from the first to the second is considered more natural and in a sense necessary, we must emphasize the second one. As will be shown later by example, the profits to be gained through the use of this method will not be small. The most important merit is that the evaluation of characteristics can be made more substantial. The first method is too abstract and general as its phenomenistic character naturally suggests. It is possible that, if we take the standpoint of stability according to the price-centered parameter system, one will see no difference as a matter of form between the mammoth economy of America and the pygmy economy of Japan. Of course, when we look into detail, we find a great difference in the manner the economy reacts, and the extent it adapts itself to the changes of data, and through this difference we can grasp the characteristics of each economy. But the abstractness of a method is apt to force the analytical process to remain abstract and not to go any further, leaving concrete differences to be combined with extra-economic data directly, instead of through the method itself. The analysis of national income, on the other hand, can shake itself free from such abstraction in that it deals with concrete and statistical data.

This possibility must be highly estimated. Frankly speaking, however, it is doubtful whether the method by national income as at present, is sufficiently concrete. National income, as well as price in the first method, are general and abstract ideas, and by themselves can never be called concrete. Against the advantage of embodying all problems, their weakness is that they often lack focus in analysis. The criticism that the most recent development in the analysis of national income is too technical, reminds one that at a certain stage the price analysis was said to be nothing better than exercises in pure mathematics. Such weakness seems to emanate from the generality of these methods in grasping economy. For an evaluation of the Japanese economy, these methods should be more concrete and should be provided with a focus. This can be done by making those specific problems a focus which characterize the Japanese economy. Once these specific problems are made a focus, both methods will show their real value. These methods may also serve to test if the problems chosen for the focus are true or false. This test is now being offered on a world-wide scale. What problems of the Japanese economy may be used in this connection? Our consideration starts from this.

III. *First Method —— Foundation*

It needs no repeating here that an economy is the social order of production and consumption. The relationship between production and consumption is most vital in an economy. If the characteristics of a national economy are defined by this relationship, they will be fundamental in the national economy. Reversely, overpopulation, the shortage of natural resources, the volume of foreign trade, or any other condition that is commonly mentioned as a characteristic of the Japanese economy, will reflect themselves on this vital relationship if they really characterize it. In fact, such characteristics do actually exist and are being subjected to study from various angles. Let us curtly call it *the contradiction between the standard of productive power and the standard of living.* We may say, the problem arises where the standard of living cannot catch up with a rise of productive power, or where a rise of productive power is hindered by low standards of living. The most important characteristics are revealed in this vital relationship.

In criticizing Malthus, Pigou once said (*Economics of Welfare*, Part 1) that Malthus thought that as the income of society increases, it will be absorbed into an increased population and will leave mankind as poor as ever. Pigou countered that though a part of the increase of income goes to stimulate marriage and is absorbed into the increase of population, other parts do not reveal their effect on the increase of children but on the elevation of living standards. Pigou argued that Malthus saw only one side of things at the cost of the other. Certainly, the history of Europe demonstrates his theory. For, it is generally agreed that one of the important reasons why in the nineteenth century, and especially in the latter half, the rate of population increase sharply declined, was the improvement of living standards. That is to say, Malthus' theory was refuted by the facts as revealed by statistics. But in the case of Japan the situation is different. No one denies that the Japanese economy has shown great progress in productive power, though not without weakness in other respects. For instance, Colin Clark points out that the advance of productive power of the Japanese economy in thirty years is comparable with that of India in one hundred and fifty years. Though some questions may be raised about the adequacy of the periods compared and the way of comparison, it is evident that the expansion of the Japanese economy experienced in the last seventy years compares by no means unfavorably with that of many European countries. To use simpler language, this can be proved by the fact that during the same period her population more than doubled, or increased from 35 million to 80 million. Obviously, the advance of productive power means an increase in *national income*, which may suggest an ensuing higher standard of national life. Japan here has taken a course entirely different from that of European countries. Almost the whole of the increase of national income has been absorbed to boost the population, and not to elevate the living standard of individuals, and, therefore, the standard of national consumption. Hence the tragic persistence of advancing accumulation of industrial capital in parallel with cheap labor. To clarify the root-cause and conditions will at the same time be nothing short of revealing the most important characteristics of the Japanese economy. This contradiction between the standard of productive power and the standard of living has hitherto been taken up in various forms of study. A variety of devices may be worked out to carry on an analysis. On our part, reverting to the general discussion developed in the previous section, we recommend the method of analysis of national income as most useful and workable. The fundamental diagram may be drawn here as below.



In characterizing the Japanese economy according to the above simple diagram, we shall have to combine productive power and the standard of living with national income as a medium. For we are shown that the inaccurate grasping of the concept or substance have blocked the road to our basic problem against the separate study of the problems.

First, the sociological concept of the living standard must be replaced by the more definite economic concept of the standard of consumption. For the living standard which emerges only by taking into account the whole of family relations, climate and social customs, is different from the standard of consumption which permits objective measurement by price and the volume of goods. Naturally, there is a close relation between them. Through this medium of close relationship, the characteristics of the Japanese economy are naturally related to those of Japanese society.

But economic analysis will not always explain sociological phenomena. In the process of analysis it will be found that if we consciously restrict problems of the living standard and substitute national consumption, we shall be able to connect effectively with the analysis of national income.

There are other problems in regard to the standard of productive power. Here, labor and capital as factors of productive power will each be subjected to analysis. What calls for our attention in this connection is the fact that the serious problem is not the fixing of the standard but rather the measurement of its movements. This has been made clear in the foregoing argument that the characteristics of an economy are none other than the characteristics of motion, but, in contrast to former characteristics studies that have been static, this point needs special emphasis. In respect to labor, the process of the increase of population and of the reproduction of labor power, and, in respect to capital, the dynamic phases of the formation and accumulation of capital, rather than structural and specific items like land, natural resources and equipment, must be paid attention to. For, this is not only required by the method intended to grasp characteristics, but what is worth emphasis, this viewpoint will render analyses by these means and by national income possible and feasible. This will be clear from the explanation that the analysis of national income is a means, termed "flow analysis", to catch the flow of productive value (income) produced annually. As against this method of flow analysis, a more comprehensive "stock analysis" is being proposed as necessary even among advocates of national income; and flow analysis alone can not do all that national-income analysis does. But it is nevertheless clear that the fundamental factor is the grasping and understanding of income in the state of flux. It can be said therefore that its combination with dynamic analysis is possible. Even on this point, it is doubtful whether national-income analysis as at present can answer the questions posed. More is needed to clarify its character as an analysis-weapon from the angle we have proposed.

As stated above, when productive power and the living standard, though in contradiction with each other, can be theoretically connected through national income as a medium common to both, the foundation by which to tackle the contradiction can be conclusively said as having been laid. The advantage of national income as a common denominator is due to repercussions from fiscal interference like taxes and levies as well as international relations —— which are, as will later be touched upon, indices to be operated from another side-angle in characterizing the Japanese economy, —— can be considered simultaneously, so far as the repercussions concern the formation and fluctuations of national income. Especially, an enhanced position of fiscal activities in a national economy, as advocated by A. Hansen, can be taken as a sufficient basis for a diagram which characterizes a national economy. If its importance to the production-consumption relationship can be seen on this basis, the primary requirement of such diagram should be met. In this way the fundamental system, as mentioned above, would be established.

IV. *Second Method —— Circulation*

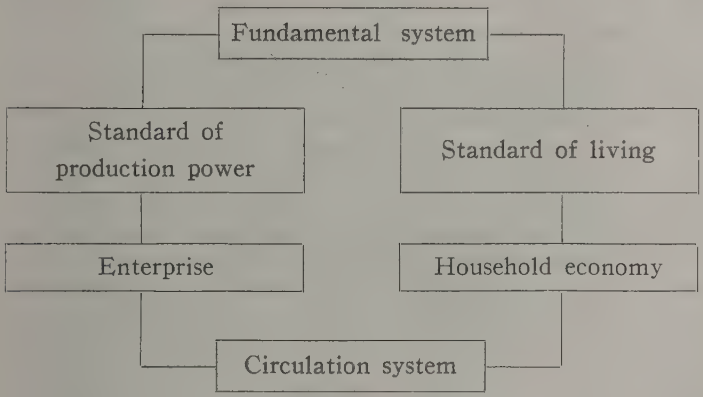
The means of expressing in economic usage the fundamental order of production and consumption is, needless to say, circulation. It has already been pointed out that the parameter system represented by price was developed as the most common method to grasp economic movements. As also pointed out then, circulation as a means of expressing the fundamental order, will be the problem for us who are concerned with the characteristics of the Japanese economy.

The greatest problem in the Japanese economy, viewed from the standpoint of circulation, is its limited flexibility and its vulnerability to changes in environment. This was most keenly felt in the inflation stage immediately after the war, and can be fully noticed in the recent tendency of rising prices mirroring the world-wide rearmament trend. During about ten months since the outbreak of the Korean war in June of last year, the price advance in Japan exceeded 30% in terms of the general index number, while that in America was only about 17%. This evidences the weak resisting power of the economic circulation system of Japan in regard to the vicissitudes of environment. High dependence on the world economy is one of the reasons ; the fragility of the foundation of national life is another. Anyway, these weaknesses, in combination with the above mentioned fundamental system, are part of the characteristics of the Japanese economy. In connection with the living standard, individuals are greatly affected by the fluctuation of the price structure. The living standard of the nation during the last twenty years may not be adequately explained without taking into account this standard itself, but also the amplitude of its fluctuations. This is why not only volume, but stability is an important issue. The same may be said of productive power. Nay, in this case the degree it is affected by the prices will be greater, as it is directly related to the international economy. It affects vitally the volume and trend of the formation and accumulation of capital. One can consider this as an instance in which the sensitiveness of the parameter system rather tends to impede the visualization of economic stability in connection with the realities of the Japanese economy.

This trait in the circulation system in the economy of Japan not only reflects the fundamental system. More imortant is that the change of the circulation system centering round prices sometimes evens up the fundamental contradiction between production and consumption, and sometimes makes it keener. It is common sense in theoretical economics that prices denote equilibrium of various factors in the economy on the one hand and constitute a starting point toward a new equilibrium of these factors on the other. As long as free calculation is dominant in forming prices, the price of rice in the market denotes the equilibrium between the demand and supply of rice. This price of rice, however, is a requisite in farmers' plans, upon which are planned next year's production, and at the same time is a requisite upon which general consumers base their calculation of consumption in the household economy. Because of these double factors, the price system is generally known as a nucleus of the economic order. This double function of prices has an important bearing upon production and livelihood, between which a contradictory relationship exists. Firstly, when equalization in the price system works upon the standard of national life through a change of national income, the tendency is toward the lowest standard, just as water flows into the lowest place until resistance grows at last to halt the equilibrizing movement. The importance circulation bears on the problem of living standards will thus be seen. This problem has recently been taken into consideration in assessing the tax burden. However, for an inquiry into the importance in national life of the taxation problem, it will be necessary to discuss the fundamental function of circulation. Needless to say, lack of equilibrium in prices tends to enlarge the fundamental contradiction between production and living standards. This fact can be seen, above all, in the peculiarity of capital accumulation in the economy of Japan. Where and how has new capital been accumulated through the period of inflation? How has the profit urge been realized in the cource of rising prices? The assertion that inflation to some extent should be rather encouraged for the sake of production expansion and the assertion that stability should be maintained for the sake of the security of living, —— these two different assertions with which we are frequently faced indicate after all the nucleus of the problem.

The price system tends to cause the contradictory relationship between production and living to be absorbed in the individual economics of the entrepreneur and household economy on the one hand, and works to enlarge this contradictiory relationship through a change in prices on the other hand. This relation will be shown in the diagram on the next page. This diagram aims to take up the problems in the economy of Japan more unitedly in connection with the fundamental system, these problems arising separately through an analysis of inflation and taxation.

It may not be possible to understand this diagram because it merely shows the general relationship. To understand it, it is necessary to examine the flexibility of the household economy in regard to prices through analysis of the current situation of the economy of Japan, and to do so attention must be paid to the difference on this point between the farmer and the laborer. The same is true with enterprise. Here we must examine for each industry to what degree the productive structure of the enterprise is sensitive to the change of prices and how this reacts on the productivity of the enterprise. As mentioned the foundation common to the above relationship is the price system, but this system must be classified into the three categories of wages, prices and interest, which must be established concretely for each industry, occupation and market. To grasp this relationship as circulation, one will not be able to neglect finance and currency which are a concrete part of circulation. However, as far as the first method which we have classified above is concerned, these have been fully developed through practice in the long history of economics and it will suffice to say here that our main objective is to grasp these matters in combination for the purpose of greater clarificatin of the fundamental system. It goes without saying that the influence of the public economy acting mainly through activities of financing, and the influence resulting from a change in international economic relations are perhaps most easily discernible in this circulation system. Thus, the diagram of the second fundamental system as well as that of the first fundamental system should be accepted in evaluating the economy of Japan.



In a similar way, a third and fourth system, and a third and fourth diagram may be contemplated. As a complement of the above, we can easily suggest, for instance, "relationship in industrial structure", "relationship between public and private economy" and "relationship of the national economy to international economy". First, as regards relationship in industrial structure, anyone will recognize that the largest problem in the economy of Japan is the relationship between agriculture and industry. This relationship is a characteristic of the economy of Japan viewed from both angles, that is of the problem of migration of labor on the one hand, and the circulation of products against food on the other. In other words, the contradiction between production and living, generally spoken of as fundamental, is expressed more concretely through the foregoing double-faced contacts between industry and agriculture. The contradiction is not only expressed, but is sometimes softened and sometimes strengthened by these contacts, which circumstances are not different from those mentioned in regard to the circulation system. Therefore, an analysis of this relationship will mean more than a mere complementary diagram. Secondly, the relationship between public and private economy, since it has been often referred to, will not be discussed again. In short, the importance this relationship holds to our problem can be conjectured from the increasing attempts to grasp the characteristics of the modern economy based on this relationship. Thirdly, international economic relations in the economy of Japan with both the fundamental and the circulation system, are, as already explained, characterized by great dependence on foreign trade. Furthermore, since this relationship is, in a way, the final conclusion of an evaluation of the characteristics of the Japanese economy, special attention should be paid to it. Our task was to give a picture of the "face of the Japanese economy" in order to grasp the characteristics of its flow. The methodology which has been developed for this purpose is still in skeleton and is susceptible of future development. Such development, I presume, should be in the direction of international comparison. I have been proceeding with this task by degrees since the end of last year in cooperation with some tens of young scholars. The above is a mere preliminary program for further study.

JAPANESE SMALL INDUSTRIES DURING THE INDUSTRIAL REVOLUTION

A STUDY OF NATIONAL STRUCTURE OF INDUSTRY

By Tokutaro Yamanaka
Professor of Economic Policy and Labor Problems

I. *Introduction*

The fact of emergence of large scale industries is the key which explains the naissance of problems of small industries, because historically these called for the first time by the name of small industry have long existed without being given this name before the emergence of large industries. The industrial revolution or the first period of industrialization is the transition period when large capitalist industries become dominant form of national industrial structure. It is at the end of German Industrial Revolution that for the first time many economic studies called attention to the problem of "Klein Betrieb", while they understood these small industries, according to the industrial stage theory common to the historical school, as hand works or domestic industries destined to be eliminated by the competition of large capitalist industries or factory system. Without any change by themselves, they became "small industries" because they were small compared with the new factory industries and moreover became so sudden out-of-dated that their fate was only to fade out supplanted by these new comers. Why and to what extent are they to be eliminated? How should they be protected during this transition period? — These were the lines of issues pointed out as to the newly found problem of so-called small industries.

Japanese industrial revolution, which forced by her coerced entrance to capitalist world of economy, developed during about 1885–1919, introduced large scale capitalist industries to our industrial production, so that Japan had the basis to discern and take consciousness of problems of hand work or of domestic industry as small industries against factory industry. Nevertheless, it is worthwhile to note that the introduction of the large industries in Japan did not, in the same sense as in Western nations, give rise to the small industries problem and make the society in general aware of its existence. Though to-day Japan is worldly known as a country rich of small industries, which consist not only of traditional or native industries of long history but also of these branches which have been born newly side by side with capitalist large industries, her industrial revolution passed without being conscious and troubled with problems of declining small scale industries. Here is one of marking characteristics of the structure and development of Japan's capitalist industry.

This is a point which not only explain the development of our small industries but also gives some light to the question how an asiatic backward country like Japan was able to come into the path of industrialization and how labour cost in Japan functionned to this course of progress.

II. *Existence of Small or "Native" Industries*

——*How it was seen by contemporary opinions?*——

A

Contemporary literatures exist a little concerning the competition between large and small industries during Japanese industrial revolution. Among them, the first group is these developed by several university professors. They discussed the competition between large and small industries and concluded in general the inevitable defeat destined to the small. But in this argument they did not refer at all to the Japanese industrial facts. As nearly all contemporary economists, they imported, or translated loyally into Japanese, what European teachers were preaching. Therefore in this case, they merely followed the teaching and conclusion developed by German historical school, without analysing Japanese economic facts anymore. Thus this first group gives no light upon the problem in Japan whether small industries existed and struggled for existence vis-à-vis large industries.[1]

The second kind of literature is few but more interesting and important. The one is Gennosuke Yokoyama, *Lower Class of Japan* (in Japanese, Tokyo, 1889).[2] The author is a journalist and the book is a research report, chiefly deducted from his own survey among these lower classes of Japan at the merge of 20th century. His work is famed of the value that this is one of few literatures which tell the conditions of industrial poors during Japanese industrial revolution. He refers in this work to artisans in Tokyo as small industries of long history, surviving in general against the menace of newly imported large factories (p. 88). Another one is Matasaburo Shibakawa, *The Future of Japanese Small Industries* (in Japanese, Kyoto, 1904). This work is perhaps the only literature which treats specially the facts of small industries of Japan during her industrial revolution. The author died young in Russo-Japanese War and the work was published posthumous. What he indicates as small industries consists of price or hired work and handicraft. "Domestic industries" as well as "manufacturing industries" are both omitted. This is because, he says, these two are both large industries similarly except the difference of form of production, i.e. the one dispersed and the other centralized. In other words, he excludes evidently domestic industries from small industries (p. 9). By this definition examples of Japanese small industries in his book are not so numerous and some of them are of nature such as it is questionable whether they should be classified as small industries.

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[1] Prof. Kumazo Kuwata, *Industrial Economy* (in Japanese, Tokyo, 1897), Chapt. 7, "Competition between Large and Small Industries"; Prof. Kinji Tajima, *Modern Economics* (in Japanese, Tokyo, 1897), especially its "Small and Large Enterprises" in the part of Production, 1901 edition, pp. 197-9; Prof. Iwasaburo Takano, "Competition between Large and Small Industries and Economic Effects of Small Motors" in the *Journal of the Academy of Political Science* Vol. 10, Nos. 113, 115 (in Japanese, 1896). These are the examples. It must be added that Schulze-Gavernitz, *Der Grossbetrieb, Studie auf dem Gebiet der Baumwollindustrie* (Leipzig, 1892), translated into Japanese by Kakujiro Yamazaki (Tokyo, 1903), discusses the large scale of British cotton mills from a standpoint of a German economist.

[2] Gennosuke Yokoyama, *The Lower Class of Japan* (in Japanese, Tokyo, 1899), discusses small industry in its reference to "Society of Artisan Labor". A major part of these small industries, while being invaded by industries operating with European machinery, remains in existence (p. 64). But its position, differing from the days of the Tokugawa Shogunate, was

While Shibakawa stood under the theoretical influences of the German historical school as his contemporary Japanese economists, he remarked as follows utilizing chiefly data given in famous *A History of Japanese Industry* (in Japanese, Tokyo, 1897) by Tokifuyu Yokoi. After the restoration of Meiji, the rise of industries of European system influenced in some degree traditional Japanese small industries. Nevertheless, while large industries were in general these newly founded one, imitation of European factories, the opening of foreign trade happened not only to give stimulus for these industries hitherto shown slow progress but also to give rise these small industries which had never existed in Japan. Therefore the competition

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relegated to that of labor in relation to the merchants or putters out. For the small industry, however, there arose a series of problems such as its old relations with the merchants and customers turning more relaxed, careless manufacturing, despotism by the merchants or putters out in distributing gains, the relations between boss and journeymen loosening up (pp. 69 ff.). But the book does not deal with what was being brought under pressure by foreign-style machinery industry. Instead, it points out the following new vocations that operated in the form of old artisan industry, namely, shoe-making, photography, laundry, hat-making, brick-making, painter, rikisha-man, cart-hauling, sewing, printing, umbrella-making, leather work, precious metal work, precious metal plating, electric apparatus making, glass making, leather dyeing, brief-case making, glass work, chair and table making and so forth (p. 66). Although it is considered that hats, hosiery, glass, soap and the like were made in factory organizations (p. 66), the author does not make clear their relations with what is called small industry nor does he specify whether such trades were carried on in the form of artisan industry as thereto. It must be said that the author's observations are not sufficient. But judging from what he takes up as problems, it may be seen that the author tries to treat the relations between the merchant employers and artisans rather than the small industry's competition with large industry. It may be pointed out that competition existed among artisans themselves and merchants were in a position to take advantage of it.

between large and small industries was not yet so keen that small industries were allowed to grow remarkably after the restoration of Meiji.

"Chief branches of industries which have been founded newly or developed remarkably, are of flanelette, cotton rug, china, brick, earthen pipe, cement, cloisonne ware, glass ware, lacquer ware, copper ware, match, fancy straw mat, straw plait, type printing, paper, shipbuilding, machine engineering, cotton spinning, weaving, etc. It is not without some branches of traditional industries disappeared because of the decline of demand, while these cases are comparatively so few that the industry as a whole marks far more great progress and development" (p. 26).

Thus, in Japan public attention was not called by these who cry for social relief or resort desperately to violent actions, oppressed under the competitive power of new large industries, such as frequently seen in the European industrial revolution (p. 95).

It seems to me that the factual data cited by Shibakawa, i.e. flanelette etc., may be borrowed from Yokoi's book in which he shows them as kinds of industries after the restoration of Meiji. Shibakawa enumerates them without further selecting whether the industries in question are large or small. These data are not factual in literal sense but something of guess work or conjecture or, in a word, not enough as data. Moreover, the cited new branches of industry are not necessarily all small industries. Nevertheless his assertion cannot be overseen that it is not ascertainable that the competition of large industries was both sweeping out small industries and creating social troubles.

The third kind of literature is of rather early date and does not recognize itself as a study of small industries vis-à-vis large industries. This is Masana Maeda, *Observations on the Development of Industry*, 30 vols (in Japanese, Tokyo, 1884).[3] This voluminous governmental report is one of the most important material for the study of industrial conditions in the early date of Japanese industrial revolution. The author, vice-minister for Agriculture and Commerce, travelled by himself greater parts of Japan and the report in question should be called as the compilation of his research. This report is noted as the first that called attention for the value of traditional industries against the general trend in favor of important European style industries. Maeda published another small book years later, *My View* (in Japanese, Tokyo, 1892), restated résumé of the above report. In this book, he devided industries into two kinds, i. e. "native industries" and "mechanical industries" or industries driven by machinery. The former takes, he says, the first place in our industries which Japan can be proud of in the world market, such as cloth, china, lacquer ware, copper ware, paper, etc. While the latter ranks as secondary one though they have to compete with imported goods on the one hand and to strive for export to countries such as Russia, China, Korea, Manchuria, etc. He argues that Japan's economic policy had worked in mistaken way since the restoration of Meiji as it had devoted itself to the secondary one, forgetting the due priority which should have been given to the first rank of industries (*My View*, pp. 115 ff.). He enumerates principal Japanese export goods according to the importance of value and points to push on policy based in these branches of industry. Principal Japanese products given in *Observations*, Vol. 12, are rice, cocoon, cotton, tobacco, rape-seed, sugar cane, linen, raw silk, tea, campher, wax, indigo, cloth, china, lacquer ware, paper, metal ware, spinning, "sake" or Japanese rice spirit. Except the last two, these are deemed as export goods(*Observations*, Vol. 18, pp. 465--490). In other words, Europeanization, an inevitable result of foreign trade, gives rise to naturally demands for western goods which are possible neither to suppress artificially, nor to supply wholly by home production. As Europeans have their special products, Japan has also her special products. These our specialities continue to be produced for supply by virtue of their strong points or superiority in the world composition. It is these branch of industries that Japan ought to encourage by her economic policy (*My View*, p. 116).

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[3] *Observations on the Development of Industry*, vols. 30, is found now in *A Collection of Documents for the Fiscal History of Early Meiji*, Vols. 18, 19 of I which have been referred to in this article.

Thus the problem here pointed out is of native or traditional industries but not of small industries. However what the author means by native industries are nothing but handicraft and domestic industries both rural and urban. The report does not forget to indicate as object of encouragement such as modern cotton spinning. However general interest are shown for these native industries. For example in the parts where the report analyses difficulties in industry, attention is demanded to the fact that makers are poor in the capital, so that they are even forced to contract with foreign buyers on unequal and disadvantageous conditions (*op. cit.*, p. 645).

B.

To conclude, first, literatures available of Meiji period, which treat small industries more or less from Japanese economic data, seem to think small industries as handicraft or industries "not transplanted by imitating Western style production" while on the contrary to think large industries as these which in general do not belong to native or traditional industries. Shibakawa has also the same view on large industries (*op. cit.*, pp. 94–5). So, in this sense, he is of the same opinion as Maeda about "Western style industries" at least. Thus it is not too far off from the truth that, in the case of Japanese industrial revolution, the formula of small versus large industries is supplanted by the formula of native or traditional versus European or imitated industries.

Secondly, small industries understood as above became also to be the subject of social interest. But it was not because they were on the marge of disappearance like in other countries but because they were neglected by public policy. They were said to be on the way of growth side by side with large industries imported. However, they were poorly organized and badly equipped. Public policy was called for to help them in order to cure these defects. Such an attitude was best represented by Maeda. In the case of Shibakawa, he pleaded for them less actively. He said, though publicly agony uttered by the small against the hard competition with the large was not heard as in Europe it did not go without saying that there existed no such troubles at all. For, in old industrial circles, men were so long accustomed with the feudal oppression that they were likely to tolerate their social sufferance silently. This was the reason why he analysed the small industries problem and suggested some remedies for them.

Thirdly, the problem thus thought was not of crucial one. Unlike the situation in Europe, the problem was not put as of smalls' death or life. Therefore remedies shown by above studies consists chiefly of trade association system, industrial education and information institute, etc. For example, Maeda's *Observations*, pointing out smalls' defects such as uncontrolled competition, insufficient organization, poor preparedness to new market, etc., proposed following policies. Organisation of permanent bazaars or show rooms in order to promote workers' knowledge on commodities, establishment of industrial laboratory in order to furnish due technical advice, encouragement of machine engineering industries in order to supply machines for small industries, to save labour as well as to produce goods uniform and cheap, and circulation of consulting engineers in order to give aid to small shops who lost themselves in erroneous way.[4] Shibakawa's proposal was more simple than Maeda's, but in principle he did not differ so much from Maeda. Moreover such view was not limited to these two at early or middle days of Meiji. In fact this view on the nature and problems of small industries continued through until later days of our industrial revolution. We can cite here an example shown by an government official at the end of Meiji era. In 1911, Minoru Oka, chief of Department of Industry, Ministry of Agriculture and Commerce, wrote as follows. There exist in Japan, side by side, these industries imported from advanced countries and these traditional industries, such as silk, oil, tea, lacquer ware, straw plait, china, paper, etc. The later lack of capital, stick to out-of-dated custom and suffer of cut-threat competition at the mercy of merchants' control. It is necessary to open the way for them such as utilization of mutual credit association, technical guidance by public industrial laboratory, machine lending to trade associations organized by them, etc. Evidently he does not share the optimistic view of Maeda concerning the strongness of small industries. However, main line of his concept as to the problem is of the same nature in substance as Maeda's.[5] Especially it is so as Oka's point of view conceives the problem from the importance of traditional industries as export industries.

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[4] *Ibid.*, pp. 442–3, while it points out in other parts the ways and means of improving liquer brewing, natural indigo raising, linen cloth weaving, porcelain making, lacquer ware making, metal ware making, paper making, leather, glass, sulphuric acid, soda making, cotton spinning.

III. *Economic Policy for Small Industries*
— How it was poor compared with the policy provided for Large Industries? —

The structural position of small industries in the national economy during the period of industrial revolution in Japan as has been discussed and problems arising therefrom made measures taken to tackle them assume a special place in the economic policies in general of the Meiji Era.

As has been often pointed out, a striking feature of Meiji industrial policy lay in the introduction of an industrial revolution by the state called as "merchantilism" or "economic control". But the basic quality of consistent economic policy in the Meiji era was found in industrialization primarily designed to maintain and secure the independence of the national economy. All efforts under such policy were aimed at overcoming Japan's economic backwardness or developing basic industries of European style alone. Furthermore, such industrialization was not directed at the development or supplanting of the existing productive power but at the creation or "importation" of new productive power not because it was objectively deemed easy but because it was vitally necessary.

On the other hand, all the productive departments such as those existed to meet the popular demand in the country, or the existing industrial branches that could be turned for export purposes and the type of new demand that could be taken care of by the form of native industry then in existence were to function as important levers for developing the structure of the national economy in the Meiji era, as will be explained later. To speed up the industrialization of these fields, however, no such qualitative and quantitative efforts were made as comparable to those bent for "imported" large-scale industrial departments. State leadership in the former was far less positive than in the latter.

Thus, all policy for the industries hitherto in existence may be compared to the doldrums or policyless belt in the area of active and positive economic policies in the Meiji era and what is to be stressed is that it could remain so under the existing circumstances. The reason is that the structure of the national economy in the Meiji era was founded on such a basis of reproduction as will be explained later, and also is that there were few problems socially felt concerning small-scale industries and the latter, especially as weaving was the case, could expand within its own sphere. In other words, all such industries, though small in productive power, were developing for popular home demand and for export purposes without special protection or aid from outside. Furthermore, even if the state had wished to give special attention to small industries, it could not afford it with the limited economic power in an industrial revolution that had been devoted to the quick equipment of large basic industries. There is no denying, besides, that the organization of demand and supply in those days made it possible for small industries to remain what it had been.

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[5] M. Maeda, *The Meiji History of Commerce and Industry* (in Japanese, Tokyo, 1911), pp. 311 ff.

In short, economic policy in the Meiji era was primarily concerned with the development of large-scale industries. This in fact brought results contradicting plans by above cited *Observations* by Maeda. In other words, Meiji economic policy had to be dominated consistently by pre-*Observations* consciousness.

All this does not mean, however, that there was no initiative on the part of the state to take up the issue of traditional industries or to formulate policies therefor.

As in the case of large industries, it was noted in some instances that the state exerted efforts to develop productive skills in such industries, as seen in the introduction from Europe of Jacquard and other weaving looms on the occasion of the Austrian Fair in 1874 or improvement in dyeing techniques in the early part of the Meiji era. Since the middle of the Meiji era, the state set up industrial laboratories, as urged by theorists such as in *Observations* etc., which made considerable contributions. A typical example is the cotton weaving industry in Hamamatsu, Shizuoka Prefecture, which is a model in the development of Japan's small industries and which falls under the category of the so-called localized industry. Although it was after the latter part of the Meiji era, the industrial laboratories in Hamamatsu made remarkable contributions toward the growth of the local industry including productive know-how.[6] But it was in Tokyo in 1900 that the Ministry of Agriculture and Commerce established the first industrial laboratory in Japan. Subsequently, the Government set up various types of laboratories in various sectors of the country but their contributions began to vindicate themselves after the later part of the Meiji era. Compared with the efforts made by the Government to develop large industries, his activities shown in these state-operated laboratories were almost negligible.

If anything important in the Government's policy for the native or small industries to be pointed out, it is found not in promotional efforts accompanied by state expenditure but in the control of market organization.

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[6] *Speaking of the Enshu Textile Industry* by Hamamatsu City (in Japanese, Hamamatsu, 1945) references to the contributions of the industrial laboratory in Hamamatsu City.

The institution of trade association was considered an important part of industrial policy for small industries in the Meiji era. But it was considered important chiefly in checking the evils of competition among small-scale manufacturers.

Competition and confusion in the old routine of transactions resulted from the collapse in the Restoration of the Meiji era of feudal trade associations that had operated under the Tokugawa Shogunate. Such Restoration confusion, however, served to stimulate small-scale manufacturers to reestablish their autonomous trade associations after 1871–72.

But measures to tackle extreme competition and careless manufacturing among numerous small business could not be simple. These problems sprang up among small-scale manufacturers since they are small and it was easy for them to compete. But there were other reasons such as lack of organizational unity in demand and supply conditions and the relegation of home manufacturers by merchants or putters out to the position of dependency in the economic scheme of society at that time as seen in the "putting-out" system. Although the elimination of putting-out system and the unity of makers with reference to market and production should have been considered vitally important under such circumstances, the Government did not frame small-industry policy in the light of this analysis.

First official attempts to legalize the institution of trade association were found in the "rules of the trade association" promulgated by the Ministry of Agriculture and Commerce in 1887. But the local trade associations failed to do away with extreme competition and careless manufacturing. As a result, the Government promulgated "the Law for the Trade Association of Important Export Goods" in 1897 to check careless manufacturing after recognizing, first of all, the need for the unified regulation of the export industry on a nation-wide scale. Official efforts along this line were extended from export to general industry in the form of "the Law for the Trade Association of Important Goods" in 1900. Under this law, not only the producer, but the dealers or marchants as well were made members of the association. Although the type of business that was carried on by such association was not uniform in nature, it mainly concentrated efforts not on its industrial function but on the inspection of products. The number of such associations rose to 770 at the end of 1909.[7] Fukui Prefecture Authority set an example of combating careless manufacturing by enforcing inspections on local products with outlay of ¥ 1,000 in 1892.[8]

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[7] M. Maeda, *The Meiji History of Commerce and Industry*, pp. 594-5.

[8] *Investigation Reports of Weaving in Fukui and Ishikawa Prefectures* (in Japanese) is a report by students during the summer vacation trip in 1900 and published by the Higher Commercial School, Tokyo, p. 32.

What matters basically is not productive conditions of the traditional industries. The credit association is also considered important as a financial measure for small industries depending on the putters out or merchants,[9] but anything that was to be accommodated by the association should be regarded basically as funds for the process commercial rather than productive. The law did not seek to serve the small industries as a leading middle class agency or wage-earners because they were to face financial difficulty more often than large industries by fluctuation of economic conditions.[10] The law considered traditional industries a productive power, but it merely sought to prevent at the gate open to the market from the producer the unequal quality caused because of the smallness of the process of production from giving bad influence on the value of goods manufactured. In short, the law sought to attain the equality in quality of products through inspection[11] in order to adapt such products to large markets rather than by expanding the scale of production itself. In this instance, the "large market" does not imply the market such as opened to the big Japanese cotton mills, but it was a relatively large market for the traditional industries existing in the Meiji era.

To repeat, since the trade associations were organized and operated without dividing merchants and producers, the influence of the merchant playing a leading rôle in the social economic system remained stabilized within the association vis-à-vis small manufacturers and hence the problems of small manufacturers, such as competition among themselves and dependency on the merchants, for instance, remained unsolved. Thus problems of small-scale manufacturing in Japan which was then regarded as traditional industry were left during the Meiji era to be taken care of by such lukewarm measures or no policy, quite contrary to the case of large industry. Underlying this situation might be the feudality of small-scale manufacturers which could silently stand suppression and difficulty[12] and which might not have aroused the social attention toward the social importance of their problems. But, what is more important, the relations already mentioned as a distinctive feature of the structure of Japan's economy in the industrial revolution, should be considered the basis for the negativity that characterized the Government's industrial policy to the traditional or small industry.

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[9] M. Oka, *op. cit.*, pp. 132 ff.

[10] The work by G. Yokoyama, *op. cit.* (p. 64 and p. 69) develops discussions from a standpoint of labor.

[11] Tokifuyu Yokoi, *An Industrial History of Japan* (Kaizo Library, in Japanese, 1898, Tokyo), pp. 155-6.

[12] M. Arakawa, *op. cit.*, pp. 94-5.

IV. *Changes happened in the Position of Small Industries*

A

People in those days viewed small industries then in existence and mapped out policies as has been explained. But when one views actualities in industrial revolutions widely, he finds that changes took place in small industry silently. First, it was not that small industries could be maintained in the rather stable conditions as before, for it had to be recognized that the process of weeding out operated in small industries too. But this process of weeding out proceed mainly because of inner competitive pressure, not from large industries. The reason is that competition took place intentively within small industries. For instance, weaving operated in various localities of the country in a manner of self-supplying economy, handicraft or domestic industry until the latter part of the Tokugawa Shogunate. But all weaving did not survive or develop as a small industry in such forms. Of all these local industries, only those capable of adapting themselves to new market conditions at home and abroad, or those in weaving circles, for instance, that resorted to the use of cotton yarn produced in the factory system ahead of others, developed and became the core of small industry in the Meiji era. Included in the latter were those who adopted the Jacquard weaving looms imported from Europe in the early part of the Meiji era after modifying it to meet Japanese requirements. The structure of the national economy in the Meiji era, therefore, did not mean solid stability for small industries in general. Far from it, keen competition existed within small industries.

A glance at the weaving industry reveals, for instance, that localities known by specialities covered with the name of place such as "Yuki" striped cloth, "Maoka" cotton cloth, "Nara" bleached cloth went downhill in sharp contrast to Aichi and Gifu Prefectures producing striped cotton cloth made of gassed yarn, Saitama Prefecture turning out "Futako" striped cloth and the Kishu district (centering around the city of Wakayama) manufacturing cotton flannel which began to prosper with the rise of European style cotton spinning mills. In silk weaving, grew Ashikaga of Gumma Prefecture turning out silk and cotton blended fabric and Tango of Kyoto Prefecture and Kiriu of Gumma Prefecture producing "Kanko" crêpe.[13] Such rising weaving districts include not only Nishijin of Kyoto, Jomo of Gumma and many others which had maintained their status since the Tokugawa era but also such places as Ashikaga, Nishiwaki, Fukui etc.

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[13] T. Yokoi, *op. cit.*, pp. 172, 192, 194.

Ashikaga, which had been a rather minor place in Jomo district established itself as a weaving center around 1880 as a result of its producers consciously competiting under the group name of Ashikaga commercially and industrially with their rivals in other districts.[14] Nishiwaki in the Banshu district distinguished itself after the middle of the Meiji era although it had been little known before the Restoration of Meiji and the Fukui district which has become the center of famed "Habutae" silk manufacturing in Japan caused in the course of its growth the fading out of near-by districts producing "Ishida" striped cloth.[15] All these weaving centers grew newly as small industries.

Such relations of competition existed throughout the period of our industrial revolution and even at the end of it in many instances. For instance, Bishu (west parts of Aichi Prefecture) which had an upper hand over Enshu as far as cotton weaving was concerned, until the middle of the Meiji era, was surpassed by Enshu's narrow breadth weaving at the early stage of World War I ; consequently, it had to turn newly to the manufacture of woolen cloth, now becoming nearly sole producing center in Japan.[16] Of the export industry districts that have flourished are those which have demonstrated far-sightedness in weaving enterprise. For instance, Enshu, for one, started exporting products to Manchuria in 1894 and established itself firmly as an export weaving center in the middle of the Taisho era by switching to introduction of power looms of narrow breadth weaving ahead of other districts and then to that of broad breadth weaving. Such technical progress contributed toward the rise of Enshu as a cotton weaving center together with the development of so-called external economics in the locality.[17]

B

In the second place, it must be added that competition between small and large industries was not also non-existent. One instance is competition between products of purely indigenous water driven manufacture that sprang up somewhat as a spontaneous development from traditional handicraft in the country and products either imported from European factories or supplied from "imported" Japanese capitalist factories. Characteristics of the technical conditions of Japan's industrial revolution were that they were technique "imported" but not indigenous. But this does not mean that there were some exceptional cases wherein indigenous technical progress grew from Japanese industrial soil. Of a few such cases can be mentioned the "Gara" (noisy) spinning machine invented by a native, named Shinchi Gaun (1842–1900). Exhibited at the Domestic Industrial Fair in 1877, it drew considerable attention from the visitors. "Inasmuch as it could be operated with a small amount of capital, imitation machines were manufactured in various parts of the country to be adopted by farmers for their own use. Called the "Gara" spinning machine, it produced yarn which together with hand-spun yarn competed with yarn made by imported machines until 1887. Even now (about 1901) some 100,000 spindles are in operation in Nukada County, Mikawa, and some in Hekikai, Higashikamo and other counties to turn out yarn for "Dantsu rug".[18] That the "Gara" spinning machine held a significant position in the history as a purely home-made cotton spinning machine driven by water mills is a well-known fact. The "Gara" spinning machine which went into full use in districts centering on the bank of Mikawa river as a "manufacture" system between domestic industry and factory system after the Restoration of Meiji (1868) reached its zenith of development in 1887 (some 130,000 of them were in operation in Mikawa alone in 1887). But as indigenous raw cotton began to disappear as a result of the basic policy of textile capital in the country, the "Gara" spinning machine which competed with textile capital, depending on indigenous cotton, went downhill together with farmers' hand-spinning (only 70,000 "Gara" machines in operation in 1892 in Mikawa). It revived somehow in the latter part of the Meiji era as a dependent, so to speak, on textile capital chiefly operating on such raw materials as waste fabric.[19]

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[14] *Investigation Reports on the Weaving Industry in the Ryomo Districts* (in Japanese) is a report by students during the summer vacation trip in 1900 and published by the Higher Commercial School, Tokyo, pp. 56-7.

[15] The production of "Ishida" striped cloth dwindled after a series of ups and downs because of its competition with rayon production as well as poor exports of cotton cloth. Refer to *The History of* 50 *Years* (in Japanese) by the Weaving Industry Association in Fukui Prefecture, 1936, pp. 322-3.

[16] *Speaking of the Enshu Textile Industry,* pp. 21, 48. This is a record of round table discussions by men of Hamamatsu textile world.

[17] *Ditto,* pp. 35, 46, 50, 53-4.

Accordingly, it may be said that the circumstances under which the "Gara" spinning machine went up and down in popularity at the early stage of its use show how large and small industries competed, and the former drove the latter, phenomenon generally seen in the industrial revolution stage.

A second instance is the small industry then in existence which was weeded out by imported capital turning out goods of better quality. Under this category fell candle and seed-oil which were oppressed by petroleum as lighting fuel and beet-sugar which was replaced by imported sugar. Another example is nails. Formerly, Japanese iron nails were gimlet-shaped, and edged. In the latter part of the Tokugawa era, blacksmiths made nails of used small sickles, one cutting them into pieces and other forging them, being usual form of division of labor. Blacksmiths specializing in nail-making were found in Sanjo and Tsubame (near Niigata), Matsuzaka (in Mie Prefecture) and Sakai (south of Osaka). It is said, however, that in general they let their apprentices make nails as first lessons of their training. Nails in western style made from metal rod, now being used exclusively, were first imported in about 1877. But they did not cut into the consumption of indigenous nails because of rust and round shape until 1880 when there was a big fire in Tokyo which gave rise to a sudden need for foreign-style nails. During the period of 1887 and 1897, indigenous nails were supplanted by foreign-style nails. By 1894-5, indigenous nails remained in use only in local districts of the country. Accordingly, imports of nail jumped from ¥ 870,000 in 1888 to ¥ 1,150,000 in 1898 and ¥ 3,120,000 in 1908. Their imports slightly decreased at the beginning of World War I.[20]

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[18] An outline of the Spinning Industry by the Ministry of Agriculture and Commerce is cited by Taichiro Kinukawa, *The History of Cotton Spinning in Japan* (in Japanese, Tokyo, 1937), Vol. 2, pp. 2–3.

[19] The number of "Gara" spinning machines is found in *Mikawa Spinning Yarn* (in Japanese), by the Mikawa Spinning Association, 1921. Data on "Gara" machine spinning are found in *A Historical Sketch of "Gara" Spinning* by Sei Nakamura (in Japanese, Tokyo, 1942).

The decrease in use of Japanese nails is regarded as a natural process of selection under the pressure of productive power inherent in the capital system that suppressed indigenous products, namely, higher productive power by machinery than that by Japanese handicraft, or western capitalistic power of competition capable of supressing the rise of foreign-style nail manufacture by Japanese native capital, which ought to be considered as production of such consumer goods that is linked with the departments of industry of producers goods which was hard to be had in Japan. The production of foreign style nails started in 1897 in Japan, was suspended under pressure from imported nails and again revived in the last years of Meiji after raw materials and customs protection were secured.[21] Effects of the weeding out of the traditional industries, however, were not so serious, for blacksmiths merely lost work for their green apprentices and in such nails-producing districts as Sanjo individual nail makers lost their main line of work, but the district itself developed in other lines of the traditional metal industry. Accordingly, the loss of nail production did not mean a serious social problem for small blacksmiths as a whole.

Finally, it is no easy task to get complete proof of the replacement of the dwindling small industry by a rising large industry or of the relations of governing the former by the latter since data on the former, especially on old ones defeated and disappeared, are more lacking than those on the latter. But it may be said that they expanded in their each sphere of influence while competition and selection continued more extensively within small industries themselves and we see less case of large and small industries competing in the same market.

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[20] Zenzaburo Yasuda, *Nails* (in Japanese, Tokyo, 1916), pp. 76–87, 117–123, 194.

[21] *Ditto*, p. 186.

C

Since the domestic market, though narrow and limited, expanded through an increase in the population during the industrial revolution, it stimulated a natural development in the organization of production through the relations of competition, although not so conspicuously as in the case of the export market. First, manufacture was carried on by handicraft, then by domestic industry and later by machine driven small works as in the case of power looms in textile industry after the latter part of the Meiji era. A glance at the weaving industry in the Jomo district in 1900 reveals the following :

Economic changes in the world at large have been brought about by (1) freedom of enterprise, (2) mechanization, (3) merger of capital, and (4) labor issues. But in Japan these factors excepting freedom of enterprise were not mature yet especially in the case of the textile industry. As a result, evils of large industry were not yet visible. By and large, the period was marked by the abnormal domestic industry in the case of production for domestic consumption and by a transition to the factory system from the abnormal domestic industry in the case of export goods production.[22]

In this case, the idea of "factory" is determined mainly with the number of employers, as seen in other official statistics on the textile industry from the end of Meiji to the beginning of Taisho era.[23] Accordingly, many enumerated as factories held an industrial position same as small producers under the putting-out system, if seen from a standpoint of the economic scheme of society. Handicraft and domestic industry cannot be explained from a European point of view since it was possible for small industries to be mechanized like a capitalist factory due to the backwardness of Japan's industrialization.

In the absence of keen competition in the market, there took place such parallel phenomena as the advent, of the large industry, of the mechanized but traditional industries developed for export market, and of a domestic industries grown gradually out of old traditional industries. The views that the weaving industry in Japan developed on a large scale because of its weaving done by the large capitalist cotton mills, or that there was no change in Japan's small textile industry because of the remarkable existence of small producers for domestic consumption are either one-sided and unacceptable.

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[22] Higher Commercial School Report of Ryomo Districts, *op. cit.*, pp. 35–6, 311–2.

[23] Data on the productive organization of weaving in Aichi Prefecture (cotton) and in Fukui (silk) in the latter part of Meiji and the early part of Taisho are obtained in the statistics of the Ministry of the Agriculture and Commerce, and in the factory statistics and yarn statistics of the Ministry of Commerce and Industry. But they give figures under categories of factories, domestic industry and wage-earning weaving. The factory as referred to there employs more than 10 hands, domestic industry less than 10 persons and wage-earning weaving means home labor designed to supplement the household budget. Keizo Fujita, Professor of Osaka Commercial University, cautions in his article, "Problems and Concepts of Small Industry" (in Japanese), in *the Annual of the Japan Economic Policy Association*, Tokyo, 1941, "Whether the usage of these terms is right or wrong is beyond our criticism today". For this reason, easily to be imagined that many of the references in the statistics to "factories" are factories under the putting-out system rather than independent factories.

V. *What Constitutes the Peculialities of Small Industry Problem in Japan's Industrial Revolution*

In short, it is in general the industrial revolution when the advent of capitalistic large industry accompanies the weeding out of small industry, but in Japan such weeding out of small by large did not so happened that men at the time were not driven to give serious attention to the fate of small.

Hence the Government enforced in abundance measures for large industry, it failed to do small industry anything worthy of attention, while such industry was regarded at the traditional but not small industry. Then how could such peculiarities appear ?

A

Bases of such peculiarities spring from the characteristics of the process of Japan's industrialization. The first factor is found in the conditions leading to the birth of large-scale business in the process of Japan's industrial revolution. Japan's industrial revolution resulted from foreign factors regulating the position of Japan's national economy in the world economy as indicated in the Restoration of Meiji rather than from a natural and inner development of her national economy itself. It was a change brought in from abroad to develop and maintain the independence of the national economy. Accordingly it was not the course in Japan that economic development in pursuit of profits for large-scale management resulted in the birth of large-scale industry. Superficially, the European methods of production were introduced. But that the meaning of the European way of management was not fully grasped is clearly seen in the failure of the imported industry in the early part of the Meiji era ; it did not realize the importance of management although it imitated technical skills only under the guidance of the Government.

Accordingly, even the cotton spinning industry which had developed itself ahead of others did not realize well what an important role management played in modern industry. It was not until 1882 that the Osaka Spinning Company just as established introduced skills from Europe after such realization. The company realized that Japanese spinning mills had failed to make good because they operated on such a small scale of some 2,000 spindles in sharp contrast with the minimum of 10,000 spindles in British cotton mills. It started out with 10,000 spindles and made a success of it.[24] After a lapse of time following the first import of spinning machines in the early part of the Meiji era, Japan's spinning industry began around 1887 to initiate full-fledged enterprise plans after the Osaka Spinning Company's example.[25] It must be pointed out, however, that many joint-stock corporations failed in their business as they had adopted the system (e. g. the system of large-scale management) irrespective of the scale of their production.[26] For this reason, such business considered themselves "European style" manufacturing plants operating with machinery rather than manufacturing of "large" scale system. Hence, it was not always easy to become conscious of conflicts between large and small industries in those days.

Though sufficient data are not available, it may be said that a more important fact is that small industry did not face so much difficulty, as seen in Europe as a result of the advent of large industry. As will be explained later, small industry was recognized distinctly from large industry in a form peculiar to Japan's industrial revolution, but such recognition is not given in realization of competition between large and small industries or as a trend of the weeding out of the small industry, quite distinct from the phenomena of industrial revolutions in Europe. Accordingly, labor problems in Japan's industrial revolution were created by labor under capitalistic enterprise, as seen in the labor movement in 1897 onward. Artisan or small master producers' movements as seen in England and France found similar counterparts only among the workers engaged in metal manufacturing, leather dyeing and wall-plastering.[27] Namely, large industry did not break out in the process of its development handicraft and domestic industry in general. This is something which analysists of Japan's capitalism have neither understood nor taken up for study and which is a special trait of the organization of the national economy during the industrial revolution.

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[24] T. Kinukawa, *op. cit.*, Vol. 2, p. 371.

[25] *Ditto*, p. 369.

[26] M. Maeda, *Observations on the Development of Industry*, vol. 4, points out as a factor of industrial difficulty the organization of a corporation irrespective of its size which proves to a cause for failure (p. 86). According to *The Investigation Report on the Weaving Industry in the Ryomo District* the Japan Weaving Company established in 1894 in Kiriu City with ¥ 250,000 capital increased its capital to ¥ 750,000 in 1900 operated 148 iron-made machines with 150 horse-power water wheels and employed 550 woman workers. Although the company was reported planning export production in 1898 and set a few of the examples in the district for founding a large industry, it did not progress smoothly. The reason was that in addition to the difficulty with the skills of domestic labor and with the market, the company was plagued by weak-willed share-holders who sold out their stocks freely and permitted dividend-seeking brokers to control a major portion of the company stocks. The company depended on the management who found no room for demonstrating their enterprising ability. The report says, "The company failed on its own score but not on account of machinery weaving." (pp. 48–9, 230)

[27] A trade union formed by iron workers of the Ishikawajima Shipyard and other Tokyo iron work "sought to establish factories with joint capital or accumulated reserve funds"

B

The process of industrialization in Japan is double-faced. To begin with, it was transplanted from abroad by the Government as part of its policy to maintain the independence of the national economy without waiting for a natural development of domestic capital, especially because Japan's industry had been compelled to compete with the productive power of capitalistic America and Europe. Such industrialization affected even the productive power of such consumer goods as cotton spinning as well as the productive power of national defenses or munitions, as seen, for instance, in the remarks of Seihin Shimazu or Seiryu Ishikawa, founders of the western cotton spinning industry in Japan, who had been conscious that its products would serve national defenses.[28]

Secondly, there were some departments of traditional industry which were not endangered by competition with American and European productive powers. Among them were silk, textiles, porcelain, lacquered wares, tea and fancy mats though produced under the economy of isolation, they turned into export industries with the opening of Japan to foreign trade. To this group must be added such branches of industry as producing consumer goods for domestic consumption without making any notable changes since the Tokugawa Shogunate. Although imported cotton, dyestuff and petroleum did away with the production of indigenous cotton, indigo and vegetable oil, the import of asiatic rice, not regarded as rice in Japan, did not affect the production of indigenous rice as staple

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said Sen Katayama and Mitsujiro Nishikawa, The Labor Movement in Japan pp. 68, 218-220, *Documents on Meiji Civilisation,* Vol. 11. But problems taken up by leather-dyeing workers and plasters were different. In this case, the relations with the putters out or the contractors were the major issue. In 1897, 180 craftsmen in Tokyo Prefecture organized the Tokyo Japanese and Foreign Style Leather-dyeing Industrial Association. But its main objective was to promote amicable relations among members as well as to protect itself against the monopoly of 12 or 13 clothing putters out. It was said that there were more than 65 associations of plasters and other craftsmen in Tokyo alone. A majority of them existed in name only. But the plaster association branched off into eight local units with three categories of membership, one getting contracts of more than ¥ 2,000, another, more than ¥ 800 and still another, less than ¥ 800. With 869 active members, the association held officers meetings, routine business meetings and special meetings and engaged in such activities as making regulations against careless manufacturing and unscrupulous competition for markets. (G. Yokoyama, *op. cit.,* pp. 72, 76–80.)

[28] T. Kinugawa, *op. cit.,* vol. 1, p. 50.

food.[29] Japanese rice which is a specie improved by Japanese agricultural technique and different from foreign rice began to be cultivated in place of the native rice in Korea and Formosa only in the middle of the Taisho era. Hence, foreign rice, if imported, competed not with Japanese rice but with wheat or barley in the Japanese market.

In such phases of communal consumption as transportation and lighting-heating, however, tangible changes had taken place. On the other hand, the structure of personal consumption remained intact on a considerably wide scale until after the end of World WarI, although foreign materials and foreign productive organization were imported as examples were shown by cotton and nails. Accordingly, in these phases of industry, the relationship between production and consumption peculiar to the isolated national economy had long remained in existence without undergoing such a radical economic shake up as seen in large imported industries.

Japan's economic structure is thus roughly divided into two sections, economic circulations, one international, other isolated, but what is important about this division is the fact that both were interdependent and neither could exist without the other from a standpoint of the national economy. The introduction of the European capitalist productive power for basic industries effected by a supreme order to the national economy of the Meiji era meant establishment, maintenance and expansion of industry by the import, in a perfect sense of the word, of capital goods and equipments, technique and sometimes even labor power to tackle the shortage of the market, resources, skills and capital in the country. These imports brought in with them two problems : first, how to pay for them and second, what sort of domestic economic power will make up for international disadvantages that these imports create in the establishment and expansion of productive power at home.

The former may be made possible by loan from foreign countries. Except for two foreign debts in the early years of the Meiji era, no loan issue arose in Japan because of the conflicting factors until the Government could run into debt abroad after 1900. The first factor was domestic demand for maintaining the independence of the national economy arising from the fear that the national economy might be made colonial in nature by introducing foreign capital. The second was the misgivings felt by foreign nations over their investments in Japan. In short, what had paid for the imports of capitalist industry since the beginning of the Meiji era was the export industry and for the latter some branch of native industry was of service as such did not feel the necessity of importing much foreign like or capital equipment. In the textile branch, for example, that had depended on the native weaving industry, cotton-yarn spinning imported raw materials and productive equipment while silk-reeling and weaving did the same lagging far behind in these attempts. With these exceptions, the export industry in Japan had been fed at first by raw materials and equipped with facilities, both produced under the isolated economy. In the later part of Meiji, save for the cotton industry, any branch of manufacturing, though raw materials and equipment were imported, had turned out goods through such native production for export purposes.

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[29] Tosaku Azuma, *The History of Industrial Structure in the Agricultural Community* (in Japanese, Tokyo, 1937) tells of the changes in agricultural produce in the Meiji era. As for the latter part of the Meiji era, "Japan, Korea and Formosa" in *The Agricultural Production Indexnumber in East Asia* by Isamu Yamada, (in Japanese, Tokyo, 1946), gives explanations.

That the structure of personal consumption had been maintained in much the same as in the Tokugawa era of isolation divorced individual consumption economy in Japan from the process of international economy ; so the latter influenced only mildly the popular consumption. The organization of personal consumption led to the maintenance of a simple but "satisfied" native life as recognized by E. Lederer[30] as well as to a comparatively cheap life in an international sense. This fact has been explained hitherto by theories on low wages and a over-population, especially in the agrarian community. But as a factor creating these phenomena that gave rise to these theories, mention must be made here to the maintenance in principle of the economic form of personal consumption justmentioned. Low wages are not the issue in point. According to an International Labor Office report,[31] there are four requirements for maintaining the lowest standards of an American home in New York, namely, a flush toilet, a bath or a shower and two others. If compared with these home requirements, wages and the standards of living in Japan are low. But the structure of consumption of personal life same as under the Tokugawa economy of isolation had been maintained in principle and this fact made it possible for Japan to keep such an "internationally" low wage level, make up for the internationally high cost of the large imported industry and maintain the export industry in operation.[32]

But it cannot be said that the maintenance of such seclusionistic conditions was necessarily "economic". For instance, Japanese rice produced and consumed only in Japan, which was once exported to Europe in 1888–98 but proved to be a complete failure is a most special and non-international commodity. Hence, there was no development in the production of Japanese rice arising from foreign competition. The result was that Japan was unable to reduce costs of living by importing foreign cereals cheapest as shown by English anti-corn law movement.

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[30] E. Lederer, "Japan in World Economics", in *Social Research*, Vol. 4, No. 1 (1937), explains the traits of the structure of consumption life in Japan from a cultural point of view (pp. 27-9). Although this writer does not agree with him in full, he regards Lederer's point of view as interesting.

[31] I. L. O., *The Worker's Standard of Living* (Studies and Reports, Series B. No. 30, Geneva, 1938) Chap. III, pp. 71-2.

[32] This relationship governing the structure of national life was often ignored or slighted in studies on the economic structure of national life in Japan since the Restoration of Meiji. For instance, "Effects of the Various Changes of the Meiji Restoration on tee National Modes of life" by Hajime Tamaki, in *Lecture on the History of the Development of Capitalism in Japan* (Tokyo, 1932). There was a change in the structure of the economy as seen in the replacement of self-supplying production by merchandise production in domestic industry, for instance. But attention should be paid to the peculiarities and seclusionistic nature of the structure of consumption in relation to the international economy.

In other words, the native industry which was able to operate as under old conditions of the economy of isolation turned for export purposes in one way and maintained itself through the continuance of the structure of personal consumption in the other. The receipt account of the industry and national living expenses which had both no foreign payment account paid for all the costs necessary for introduction of the basic industries, such as national defense industry and production of production goods and semi-finished consumption goods, that were necessitated for outside reasons to secure the independence of the national economy following the opening of the country to foreign intercourse. It also paid for the imports of raw materials for manufacture of export goods which increased following the pace of industrialization. The former, Japan's native industry, was a condition to the latter, transplanted industry from abroad. Simulteneously, the maintenance of the independence of the national economy secured through the latter became a protective condition for a slow development of the former. Both were able to operate depending cohesively on each other.

C

In short, during her industrial revolution, Japan tried to establish a structure of capitalistic productive power and a resultant organization of management and others in response to an inevitable demand for adapting herself quickly to the pressure from the productive power of world economics. This resulted partially in the development of capitalistic production or modernized large-scale management. Necessary costs for all this were outwardly born by state capital but basically by agriculture at the beginning and by a major portion of the native industry subsequently, for the latter were the type of productive branch that could stay away from the pressure of the international productive level. Furthermore, they shouldered the cost for labor's reproduction, turned into export industry, and paid heavily for a major portion of such large costs or "imports of the industry itself" and for the maintenance of productive elements necessary after such "imports".

For this reason, some of the self-supporting household work, handicrafts or domestic industries both rural and urban collapsed or retrogressed, but a horde of small industries centering on the native industry could make slow manufacturing developments within themselves. In such a sense, there were changes in the fate of small industry and the contradictions arising from its low productive power did exist in small industry. But there was no consciousness among the public of the existence of contradiction over small industry in a classical sense, in other words, of small industry as a contradiction in the process of weeding out by large industry through competition. To repeat, herein lies a special trait of Japan's industrial revolution, leaving in which small industry existed "in fact" but not so "on the social recognition".

It was not until after the end of World War I that Japan began to face publicly problems arising in small industry. In the fluctuations of its boom, capitalism which had barely stood on its own feet began to encounter small industry issues. But this small industry no longer represented classical handicraft or domestic industry as before. Instead, it was inclusive of productive branches equipped with motive power and machinery like capitalist ordinary plants. Accordingly, problems arising therein were concerned with troubles in important industrial parts of Japan capitalist as a backward nation. But the problem was no more deemed as of small industry but as of "medium-small" industry. In this new phraseology one found another peculiality of Japanese economic structure. An analysis of this situation, however, requires a knowledge on the economic structure of capitalist Japan which differs from that during her industrial revolution.

THE PRODUCTION FUNCTION FOR MANUFACTURING IN JAPAN

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I. *Introduction*

Since the first empirical derivation of the Production Function in 1928, there have been accumulated a plenty of achievements by P. H. Douglas and others. *The Theory of Wages*, 1934 and "Are There Laws of Production?" *American Economic Review, March*, 1948, both written by P. H. Douglas, can be taken as two main summaries of the results of measurements hitherto accomplished.

In Japan, Prof. Ohkawa[1] has obtained a satisfactory results in respect to the computation of agricultural Production Function, but satisfactory computations are still lacking in relation to the manufacturing sector. This small article, rewritten from my work[2] published in 1949 in Japanese, aims to compute the cross-section Production Function for Japanese manufacturing. Reference should be made to the recent work of the Institute of Economic Research of the Tōyō Bōseki (Oriental Cotton Spinning Company Ltd.),[3] which attempts particularly to compute the Cobb-Douglas Function in the cotton spinning industry under the direction of Prof. Iemoto.[4]

While the statistical results are embodied in a considerable volume, there have arisen many animated controversies around these computations. Durand[5] emphasized the necessity of dropping the inflexible assumption $k+j=1$ of Douglas. At the outset, Douglas' formula took the following form, $P=bL^k C^{1-k}$, where P, L, C means production, labor, and capital respectively, and b, k are the constants to be determined from the data. Durand insisted on the use of a formula $P=bL^k C^j$. There was also the idea that we should follow cross-section studies rather than time-series studies, because time series data involve the influence of time trend such as the effects of technological changes etc.[6] These two criticisms were positively accepted by Douglas, and his later works followed these lines.

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[1] Kazushi Ohkawa, *The Theory and Measurement of Food Economy* (in Japanese, Tokyo, 1945).

[2] M. Shinohara. *Employment and Wages* (in Japanese, Tokyo, 1949).

[3] *The Relative Contribution of Labor and Capital to Production*, — On the Measurement of Douglas Function in relation to the Japanese Cotton Spinning Industry.

[4] Hidetaro Iemoto, "To Foster Douglas' Production Function" (in Japanese), *Riron Keizaigaku (The Economic Studies Quarterly)*, Jan., 1951.

[5] David Durand, "Some Thoughts on Marginal Productivity, with Special Reference to Prof. Douglas", *Journal of Political Economy*, Dec., 1937.

One may mention a third criticism made by Mendershausen,[7] which I think the most important one and, in a sense, fatal to the Cobb-Douglas Function. Mendershausen emphasized the statistical impasse which is called "multicollinearity". Theoretically, I cannot find any proper answer to such criticism, and cannot agree even with the vigorous defense of Prof. Iemoto[8] which was recently developed systematically.

Although I am in a degree a theoretical nihilist on this point, yet I venture to compute the Production Function as if I were a confirmed Douglasian. There exist sufficient data that k or $\frac{k}{k+j}$ was in a close agreement with the actual relative share of wage- and salary earners. My chief concern is that there could not be the close correspondence above mentioned in Japanese Manufacturing, what with monopoly enterprises and exploited workers having few unions in the prewar period. Although some computed the relative share of labor which almost perfectly agrees with k or $\frac{k}{k+j}$, I think there is something erroneous in such a calculation. My alternative calculations show that, although labor's share was much less than $\frac{k}{k+j}$ or k, the intertemporal movements of both were parallel, with the exception of upgrades of the trade cycle, during which the degree of monopoly would be lessened.

Starting as a Douglasian, I shall add another contribution to the already accumulated results of the Cobb-Douglas Function. Whether these results are statistically significant or not, particularly in the light of multicollinearity, is not dealt with in this tentative work. A test in this regard would need another work.

II. *Why we adopt the Cross-Section Method?*

We adopt here the method of cross-section study. The reasons why we did not follow the time-series analysis are as follows:

First, in the time-series analysis, the product P involves other influences from time trends, such as technological changes, besides those from labor L and Capital C. Consequently, in order to avoid historical disturbances, it is quite likely we may prefer the cross-section or inter-industry analysis at any particular time.

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[6] David Durand, *op. cit.*

[7] Horst Mendershausen, "On the Significance of Prof. Douglas' Production Function", *Econometrica*, April, 1938.

[8] H. Iemoto, *op. cit.*

The second reason derives mainly from statistical materials. As regards product P in terms of time series, we can do no other than use the index of industrial production. But the index of production based on fixed weight would have great shortcomings, particularly in periods like the 1930's and 1940's when the industrial structure under-went a sharp change, the production of heavy industries such as machinery and metals expanding, whilst the production of light industries, e.g., the textile industry, declining.

Thirdly, P, L, C from 1933 on, made a parallel change, so that the parameters k and j in the production function are destined to become indeterminate. If we venture to compute them, it is highly probable that a few random errors would determine the values of k and j. In this case the menace of multicollinearity naturally falls upon the time-series analysis. Our tentative calculation along the time-series studies did not indicate a satisfactory result, e.g., in many cases k or j took minus values.

Such being the case, our preference of the cross-section method is inevitable. Fortunately, the statistical data of P, L, C between industries or groups classified as to size of factories by number of production workers, are available from "Census of Manufactures" (Kōgyō Tōkeihyō), by the Ministry of International Trade and Industry but we cannot deny that the cross-section method too has difficulties, e.g., how much significance the regression curves which are fitted, have in spite of the characteristic differences between industries. Nevertheless, such difficulties would be unavoidable in all research work to some degree.

III. *Statistical Data*

In the cross-section study, the data of "Census of Manufactures" is available in two manners. One is the method in which the formula $P=bL^k C^j$ is fitted among various industries or firms, and another is the method in which this formula is fitted among groups of firms classified as to size by number of production workers. Although the former has been used by Douglas and others, the latter was adopted in our analysis. There is not a particular reason for this adoption, but we are sure that, while according to the classification merely made by industries various scales of factories are mixed into the respective industries on the one hand, the comparison among relatively homogeneous factories as to number of workers becomes possible in the case of the classification by the scales of factories on the other hand. The latter has the drawback that the number of samples are limited to 9, but involves the advantage mentioned above.

These data were attached as an appendix to the end of this article.

The exposition of these data is as follows:

(1) The figures mentioned as products P are not net amounts but gross amounts which include the value of materials, fuels, electricity and gas used as well as depreciation charges, etc. If the ratio of net products to gross products is not uniform among the various scales of factories, the use of gross products by these factories enhances the inaccuracy by so much.

(2) The workers L in this case were defined as the number of manual or production workers, excluding clerical and technical staff. There is no special reason for this definition.

(3) As for capital C, we fail to find the fixed and liquid capital in money values in "Census of Manufactures". There are included, however, statistics of the number and actual horse power of prime movers, with classifications of used and idle horse power. In our computations, we regarded as capital this actual horse power in use. This procedure may have some defects, but the prevalent procedures which use as capital the fixed and liquid capital in money terms, present more difficult problems, such as the valuation of capital and the inclusion of idle equipment. Our method has no such disadvantages.

(4) The figures of P, L, C used are those excluding the gas and electricity industries. The reason why these are excluded are the following two:

(a) The products enumerated in "Census of Manufactures" in relation to gas and electricity are limited to by-products. (b) As actual horse power in the electricity industry in the 1930's amounts to about 50% of all industries, we may arrive at a better result if we limit the range of studies to the manufacturing industries.

(5) As far as 1941 is concerned, we avoid computations consciously, because we found great errors in the figures on actual horse power of prime movers in operation. Table 1 shows that while from 1940 to 1941 the number of prime movers did not change too much, actual horse power revealed significant changes in some industries; veneer 100 fold, paper 60 fold, cotton spinning, and iron refining and basic ferrous manufacturing 7 times. These inconsistent figures show the unreliability of horse power statistics in 1941.

Table 1. Apparent Errors in "Census of Manufactures"

Scale of factories	Industries	Number of prime movers in operation		Horse power of prime movers in operation	
		1940	1941	1940	1941
				H.P.	H.P.
Production Workers 1000 and over	Iron refining and basic Ferrous manufacturing	31,417	33,985	1,400,254	10,216,907
	Paper	1,634	2,517	86,722	5,157,482
Production Wokers 200–500	Cotton spinning	10,993	11,142	83,944	556,127
	Veneer	210	284	1,322	142,221
	Chemical industry	18,013	18,447	336,817	674,286

There seems to be a further error in the figures of the metal industries in 1934, and therefore we did not compute the production function in that particular industry, but the calculation of parameters of manufacturing as a whole in the same year was made with the idea that the errors in the component part will not too much influence the aggregate figures.

(6) We compute k and j during 13 years, 1929–42, except 1941, in relation to the whole manufacturing. As to individual industries, however, we have chosen 5 years, 1931, 1934, 1936, 1939 and 1942, and have limited ourselves to 4 industries, i.e., textiles, metal, machinery and equipment, and chemicals.

(7) The object of our study are *private* factories employing five or more workers. It does not include those under government or public management.

(8) Data of P, L, C are classified as to size of factories by number of employed manual workers, and the number of samples is only 9 respectively. But, as referred to already, the defect of the small number of samples may be compensated by the advantage that each group consists of comparatively homogeneous factories with regard to the number of employed workers.

IV. *The Production Function for the Whole of Manufacturing*

Gross products, production workers and actual horse power of prime movers in use representing P, L, C, respectively, which are all classified by scale of factories, let us fit the next formula

$$P = bL^k\, C^j$$

and obtain the coefficients of partial elasticity of production with respect to labor ($k = \frac{\partial \log P}{\partial \log L}$), as well as with respect to capital ($j = \frac{\partial \log P}{\partial \log L}$). If this production function is a homogeneous function of the first degree, we obtain $1 = \frac{\partial P}{\partial L} \cdot \frac{L}{P} + \frac{\partial P}{\partial C} \cdot \frac{C}{P}$, and therefore, $P = \frac{\partial P}{\partial L} \cdot L + \frac{\partial P}{\partial C} \cdot C$. If the prices of factors of production are equal to the values of their marginal productivities, the value of products will be all distributed among factors and leave no residual part. The value of products will be distributed among labor and capital according to the relative proportion of k and j. In the case of increasing and decreasing returns in turn, the relative shares of production factors will correspond to the proportion of $\frac{k}{k+j}$ and $\frac{i}{k+j}$. These are nowadays too well known.

Table 2.

	log b	k	j	$k+j$	$\frac{k}{k+j}$
1929	0.8091	0.7322	0.2210	0.9532	0.7681
1930	0.7118	0.7376	0.2205	0.9581	0.7699
1931	0.7412	0.7843	0.1627	0.9470	0.8282
1932	0.5111	0.7503	0.2471	0.9974	0.7523
1933	0.9235	0.4988	0.4296	0.9284	0.5373
1934	1.1040	0.4596	0.4361	0.8957	0.5131
1935	0.7526	0.5392	0.4261	0.9653	0.5586
1936	0.5229	0.5771	0.4320	1.0091	0.5719
1937	0.9723	0.5215	0.4165	0.9380	0.5560
1938	0.6707	0.6298	0.3700	0.9998	0.6299
1939	0.8527	0.6368	0.3406	0.9774	0.6515
1940	1.3087	0.6200	0.2841	0.9041	0.6858
1941	—	—	—	—	—
1942	1.3055	0.6201	0.3106	0.9127	0.6598

The results of our computations are shown in Table 2. The graphical representation of actual and theoretical values of log P was made in Chart 1.

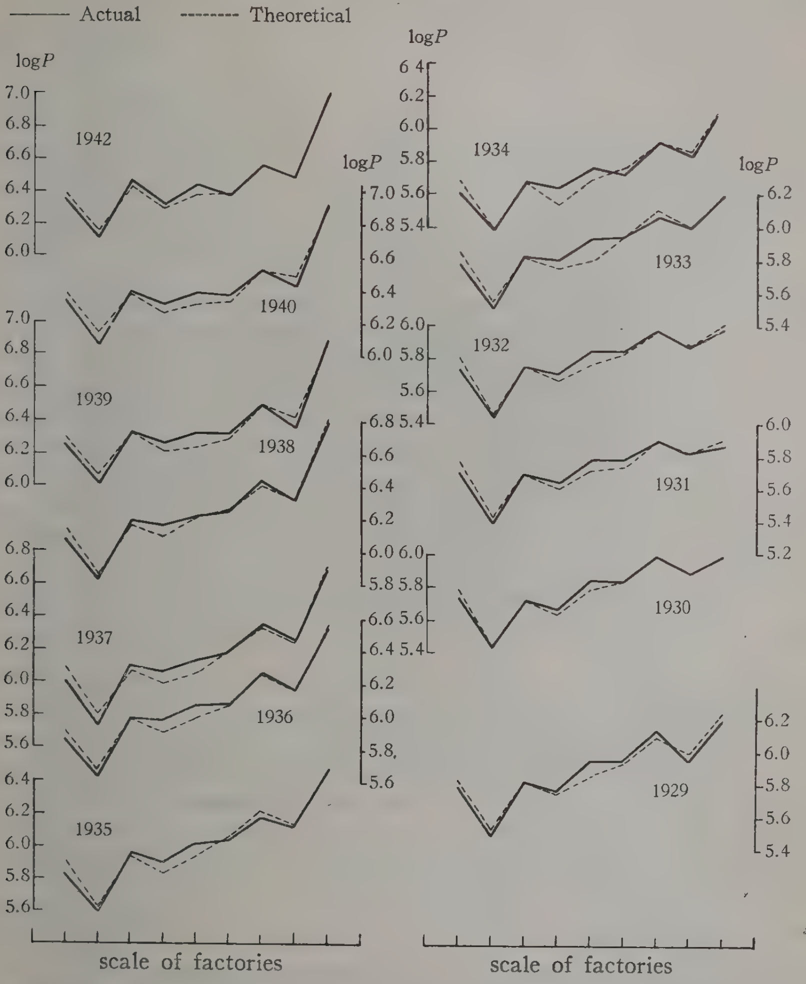
As seen from Chart 1, the deviations of theoretical and actual values of log P are very trivial. In 1930, when the correspondence between the two appears to be most intimate, the coefficient of multiple correlation amount to 0.9817, and even in 1933, when the deviations appear to be largest, the coefficient remains at 0.9717. Consequently, we can say the coefficients of multiple correlation during these 13 years will range from 0.97 to 0.98.

We can analyze the results as computed as follows:

(1) While in smaller scale and larger scale factories the theoretical values of log P are larger than the actual values, the theoretical values are smaller in the intermediate scale of factories than the actual values. According to the research work of the Statistical Bureau of Cabinet in 1931, however, the ratio of net products to gross products was 33.23% in smaller scale factories, 29% in intermediate scale factories, and 35.85% in larger scale factories. Therefore, if we use net products as P in place of gross products, we may apparently derive better results, thus reducing the gap between the theoretical and actual values of log P.

(2) There remains another problem, i. e., whether the parameters k and j in the production function will actually coincide with the relative shares of labor and capital. There are two famous estimates on the relative sharing of income from Japanese manufacturing. One is that of

Chart 1. Theoretical and Actual Values of log P



Ш. ЛИФ[9] to which Japanese Marxian economists frequently refer, —— to the effect that the highest rate of exploitation (or surplus value) during the thirties in Japan amounted to 380%. This means the ratio of capitalist income to labor income $(\frac{S}{V})$ is 3.8 and the labor's share is 28%. Another is that of Dr. Hijikata,[10]—— which states that labor's share in the manufacturing income (the proportion of wages and salaries) was 78% in 1926–28, 76% in 1929, and 79% in 1930.

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[9] Щ. ЛИФ, ВОЙНА И ЗКОНОМИКА ЯЛОНИИ, 1940 (Japanese Translation, p. 284).

[10] Dr. Hijikata, *The Structure of National Income* (in Japanese, Tokyo, 1933), Chapter 5.

If Dr. Hijikata's estimate is correct, k or $\frac{k}{k+j}$ would approximately coincide with labor's share, —— that is to say, $\frac{k}{k+j}$ in 1929 and 1930 was 0.7681 and 0.7699, while labor's share was 76% and 79%. Thus Hijikata's estimate is much higher than Ш. ЛИФ's estimate which seems to me fantastically low. Are both estimates wrong? Or which is wrong?

We find that in Ш. ЛИФ's calculation, labor income (V) does not include salaries income and that in the calculation of net income ($V+S$) expenses on fuels, electricity, gas etc., are not excluded, thus producing an excessively high rate of exploitation and a labor share which is much too low. On the other hand, it was recently suggested by Prof. Yuzo Yamada[11] that in Hijikata's estimate there was an overestimate of employees which was the basis of his calculation of labor income. Dr. Hijikata's statistical procedure depends upon other figures than "Census of Manufactures". He estimated wages and salaries as well as entrepreneur and capitalist income respectively from separate sources, thus obtaining a total manufacturing income by summation of these covering all manufacturing, including establishments employing fewer than 5 workers.

If these two estimates are both questionable, we lose the appropriate criterion with which k or $\frac{k}{k+j}$ is to be compared. We are, therefore, compelled to recompute the relative shares of labor on the basis of "Census of Manufactures", introducing some modifications.

The results are summarized in Table 3. If these results are correct, the estimate of Ш. ЛИФ would be an under-estimate and that of Hijikata an over-estimate. It should be noted that labor's share in the Japanese manufacturing was very low compared with other countries, and this fact was likely the basis of the very rapid rate of capital accumulation and production experienced in the prewar period.

In Chart 2, $\frac{k}{k+j}$ as well as k are compared with labor's shares $\frac{W}{Y}$. This graph seems to indicate the following three points:

(a) $\frac{k}{k+j}$ or k is larger than $\frac{W}{Y}$ during all years in question. This appears to be the consequence of lower wages having been paid than the marginal productivity of labor. The fact that labor unions before and during the war were extremely weak or negligible has perhaps enhanced the monopolistic attitude toward labor.

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[11] Yuzo Yamada, *The Estimated Data on National Income in Japan* (in Japanese, Tokyo, 1951), pp. 76–77.

Table 3.

(Unit : *Million Yen*)

	Gross product a	Expenses on raw materials, fuels, etc.[1] b	Gross income c [a−b]	Depreciation charges[2] d [a×4%]	Other expenses[3] e [a×5%]	Net income f [c−d−e]	Wages payroll g	Salaries payroll[4] h [g×20%]	$\frac{g+h}{f}$
1929	7,739	4,415	3,324	310	387	2,627	747	149	34.1%
1930	5,945	3,864	2,081	239	297	1,545	641	128	49.8
1931	5,196	3,286	1,910	208	260	1,442	549	110	45.7
1932	5,970	3,623	2,347	239	299	1,809	560	112	37.1
1933	7,857	4,972	2,885	314	393	2,178	636	127	35.0
1934	9,359	6,056	3,303	374	468	2,461	777	155	37.9
1935	10,816	7,052	3,764	433	541	2,790	863	173	37.1
1936	12,236	8,138	4,098	489	612	2,997	964	193	38.6
1937	16,328	11,222	5,106	653	816	3,637	1,144	229	37.8
1938	19,620	12,769	6,851	785	981	5,085	1,433	287	33.8
1939	24,793	14,727	10,066	992	1,240	7,834	1,947	389	29.8
1940	27,093	15,831	11,262	1,084	1,355	8,823	2,279	456	31.0
1941	30,458	17,224	13,234	1,218	1,523	10,493	2,532	506	28.9
1942	32,039	17,000	15,039	1,282	1,620	12,137	2,919	584	28.9

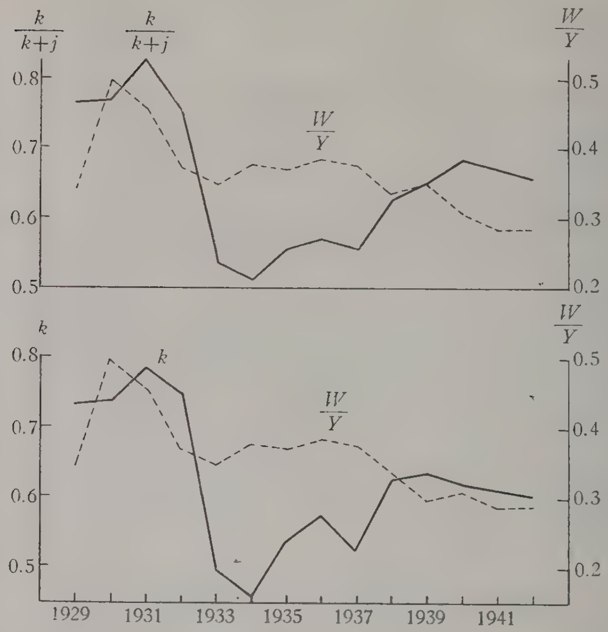
[1] Expenses on raw materials, fuels, etc. include expenses on electricity and gas supplied from other firms. The latter computation is based on the estimate of the average unit price.

[2] The rate of depreciation charges was estimated on the basis of Analysis of Financial Status of the Japanese Industry by the Mitsubishi Institute of Economic Research.

[3] Other expenses denote expenses on insurance, storage, advertising, carriage and other miscellaneous expenses. The estimate rate 5% is derived from "Research on Manufacturing Concerns", 1932, by the Ministry of Commerce and Industry.

[4] Salaries payroll rate 20% was estimated from Hijikata, *The Structure of National Income* (In Japanese, Tokyo, 1933), p. 234, Table 14.

Chart 2.



(b) If, however, the recovery period of the trade cycle, 1933–37 is separately considered, k and $\frac{W}{Y}$ will indicate parallel movements during the remaining 9 years. That k rather than $\frac{k}{k+j}$ indicates closer covariation with $\frac{W}{Y}$, may be a verification that the results of increasing or decreasing returns as a whole will be imputed to the capitalist's side.

(c) Thirdly, it may be said that cyclically k or $\frac{k}{k+j}$ was more responsive to short-run economic fluctuations, as far as the range of the observed period is concerned. It is, of course, difficult to explain why the parallel movements of k and $\frac{W}{Y}$ were lacking during the prosperity phase 1933-37. But the theory that the degree of monopoly decreases during the upswing of cycles,[12] may explain why the difference between k and $\frac{W}{Y}$

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[12] Joan Robinson, "Review of R. F. Harrod, The Trade Cycle", *Economic Journal*, Dec., 1936.
M. Kalecki, *Essays in the Theory of Economic Fluctuations* (London, 1939), Chap. 1.

was narrowed during this period.

At any rate k and labor's share do not coincide. There are strong forces at work, however, which will in the long run make the movements of k and labor's shares parallel. Nevertheless, these long-run tendencies were disrupted in the prosperity phase cyclically. Moreover, these parallel movements do not amount to perfect coincidence. The differences (k minus $\frac{W}{Y}$) had the tendency to be eventually 0.3 from the observation of 9 years 1929–32 and 1938–42. This seems to be long-term level of the degree of monopoly prevailing during these years in Japan.

V. *Production Functions for Particular Industries*

We shall commence our next task, the measurement of Production Functions for four industries in Japanese manufacturing. The data used is, as before, "Census of Manufactures". Using the figures on P, L, C classified as to size of factories by number of manual workers, k and j would be computed in relation to the four manufactures, —— textiles, metals, machinery and equipment, and chemicals. Table 4 contains these results, almost everyone of which is a fairly good fit, but the textile industry indicates the best fit.

As already mentioned, we avoided computation as regards the metal industry in 1934, because of a few errors in the data. At any rate, if the figures of Table 4 are economically significant, the following observations will be possible.

Table 4.

	Textile industry		Metal industry		Machinery and equipment industries		Chemical industries	
	k	j	k	j	k	j	k	j
1931	0.4499	0.3708	0.5317	0.3628	0.5201	0.2967	0.3931	0.3385
1934	0.5610	0.5892	—	—	0.5137	0.4785	0.2927	0.3966
1936	0.8187	0.3651	0.5517	0.5759	0.4425	0.4749	0.3054	0.3811
1939	0.5485	0.3031	0.5242	0.5339	0.0726	0.7879	0.2304	0.5486
1942	0.8320	0.1845	0.2586	0.6596	−0.5980	1.3095	0.2774	0.4162

The bottom of the depression in the thirties in Japan was in 1931, and thereafter came a sharp rise. From 1937 on, ensued the wartime economy, and the stage of full employment was reached in 1939 or 1940. Henceforth, in order to accelerate the rapid expansion of munition industries, a radical reallocation of human resources from non-munition industries took place, and there was an increasing scarcity of manpower in the textile industry, etc., and a relative scarcity of equipment compared with labor in the metal and machinery industries etc.

In the textile industry *k* was gradually larger, and j, on the contrary, became smaller year by year. This was a necessary consequence of the superfluity of capital equipment and the accelerated scarcity of labor. In the machinery and equipment industry, on the other hand, *k* was close to zero in 1939, and turned into minus value in 1942. This fall was more severe compared with *k* (0.2586) of 1942 in the metal industry. The chemical industry seems to have stood in an intermediate position between the machinery and textile industry.

It is not necessary, however, that *k* and *j* in the four manufacturing industries indicate close covariations with the actual relative shares respectively. In the war-time period in particular, wages were controlled, so that the relative scarcity of labor and capital could not be reflected directly into relative shares as would have occurred under perfect competition.

We have no accurate data in preparation which indicates the actual course of the relative shares of these industries. However, we can attempt the following approximation, by examining the process of wages in each industry or the changes of the inter-industry wage structure.

Chart 3.

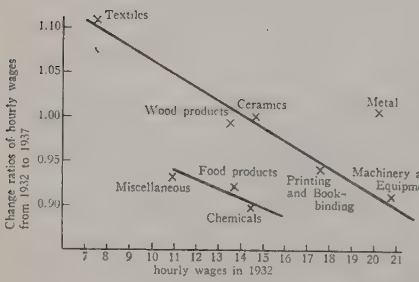
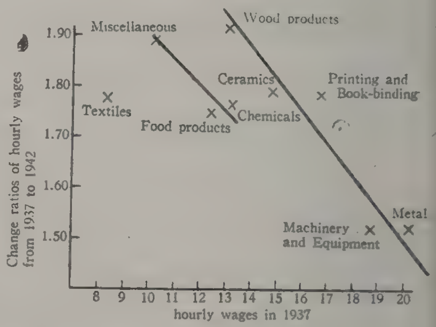


Chart 4.



In Chart 3, the hourly wages of 1932 in each manufacturing industry are represented by horizontal coordinates and their change ratios from 1932 to 1937 by vertical coordinates. In Chart 4, the hourly wages of 1937 and their change ratios from 1937 to 1942 are depicted in the same manner. These two charts are confiled from my separate study[13] of the inter-industry wage structure, and these charts reveal the higher the level of wages in each industry, the lower the rates of wage increases in the upswing of the business cycle, and vice versa, — i. e., that the wages of unskilled workers are more responsive to cyclical fluctuations than the wages of skilled workers. We could not obtain a single regression curve, but it deserves to be emphasized that in Chart 3 as well as in Chart 4, both regression lines have almost the same industries scattered along them,— the metal industry is the only exception in Chart 3, and the textile industry is the only exception in Chart 4.

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[13] M. Shinohara, "Interindustry Wage Structure in Japan" (in Japanese), *Keizai Kenkyu* (*The Economic Review*), July, 1951.

By making a comparison between Chart 3 and Table 4 we find an interesting connection between relative changes of hourly wages and the behavior of k in each industry. Although in Table 4 the coefficients k of 1932 and 1937 are not computed, we assume that we can roughly compare the figures of 1931 and 1936 in Table 4 with the results in Chart 3 between 1932 and 1937. We can there see a high rank correspondence between changes of k and inter-industry wage changes.

	Textile industry	Metal industry	Machinery and equipment industry	Chemical industry
k in 1931	0.45	0.53	0.52	0.39
k in 1936	0.82	0.55	0.44	0.305
relative changes of hourly wages from 1932 to 1937	1.11	1.01	0.91	0.90

In the same way, inter-industry wage changes between 1937 and 1942 can be compared with the behavior of k from 1936 to 1942. In this case too, there is a strong rank agreement between changes of k and the alteration of inter-industry wages.

	Textile industry	Metal industry	Machinery and equipment industry	Chemical industry
k in 1936	0.82	0.55	0.44	0.305
k in 1942	0.83	0.26	—0.60	0.28
relative changes of hourly wages from 1937 to 1942	1.77	1.53	1.52	1.75

However, the above is merely a relation between the changes of hourly wages and the behavior of k. It was not considered in terms of comparison with the value productivity per man-hour. It is the relative share or $\frac{\text{Average hourly earnings of all employees}}{\text{the net output per man-hour}}$ that must be compared with k. Consequently, we try to examine the correlation between wages per man-hour and net output per man-hour. The former are not the average earnings of both wage-earners and salary-earners, but we can by such a comparison test the parallel changes of k and their ratios. The tentative graphical representation of wages per man-hour and net output per man-hour, indicates that in general during the downswing and the early phase of recovery, they are under a negative correlation. But exclusive of the years of negative correlation, we can compute the following relations from the residual positively correlated parts of the data.

Machinery and equipment industry (1935–42) $Y= 0.2798+0.5443X$ ····(1)
Metal industry (1933–42) $Y=-0.1365+0.7407X$ ····(2)
Chemical industry (1934–42) $Y=-1.0019+1.0483X$ ····(3)
Textile industry (1932–33, 1938–42) $Y=-0.4433+0.8966X$ ····(4a)
(1938–41) $Y=-1.1956+1.3500X$ ····(4b)

, where Y = hourly wages, X = productivity per man-hour.

Inasmuch as wages and productivity are in terms of current value, it is quite likely that a spurious correlation will be involved owing to the changing value of money. But an examination of the parameters given in the regression equations of the four industries, will reveal the relation between changes of productivity and those of wages, i. e., the alteration of the relative shares.

The reason why two equation are fitted in the textile industry only are as follows: i. e., the regression curve of that industry is particularly curvilinear and the scatter point 1942 exceptionally deviates to the right from the regression, in spite of the fact that almost straight lines are valid in respect to other industries. Therefore, if we fit a straight line through the other scatter points, excluding 1942 and 1933-34, we obtain a linear form, so that the dominant tendencies during war time will be more illuminating.

The rank of coefficients thus obtained from (1)–(3) and (4b) equations perfectly coincide not only with the rank of k in 1942, but also with the ranks of rates of alteration of k from 1936 to 1942.

VI. *Conclusion*

The above results, as a matter of fact, were not tested by bunch maps. I believe some of the cases above computed will be statistically insignificant owing to multicollinearity. Consequently, it might be somewhat hasty to draw conclusions from our computed results.

However, anyone will confirm the long-run parallel between k and the relative share of labor and capital in the light of our analysis already conducted, notwithstanding the non-existence of a perfect coincidence. If I had been an enthusiastic Douglasian, I would have defended the theoretical validity of the Cobb-Douglas Function on the ground of those empirical findings, but I am not confident enough to do so.

Be that as it may, it is worth while to keep in mind that the relative shares of labor in Japanese manufactures were considerably lower than k computed. This fundamental fact reflects not only the extremely monopolistic position of private enterprise as compared with the body of laborers, but also the special characteristics of the past Japanese economy in which the farm area, having a lower standard of living than the urban districts, supplied cheap labor to the latter. These circumstances enabled business firms to realize a high rate of capital accumulation, which fostered the prominent tempo of production expansion pointed out by Colin Clark.

Other institutional factors than the marginal productivity would evidently have exerted a strong influence upon the distribution of income in Japan, but it cannot be denied that the influence of productivities of factors also was not negligible. This is a conclusion at which I have finally arrived as an optimistic Douglasian, but I am obliged to cast serious doubts as to the statistical validity of these results. The failure to eliminate the above duality is a dilemma difficult enough to overcome.

Appen-

(Whole Manufacturing)

Statistical data of P, L, C

Scale of factories by number of manual workers		(Unit)	5—10	10—15	15—30
1929	Value of gross products	million yen	620	306	660
	Manual workers	thousand	198	92	186
	H. P. in use of prime movers	thousand H. P.	149	76	178
1930	Value of gross products	million yen	533	270	528
	Manual workers	thousand	206	92	180
	H. P. in use of prime movers	thousand H. P.	167	71	151
1931	Value of gross products	million yen	506	249	499
	Manual workers	thousand	211	94	175
	H. P. in use of prime movers	thousand H. P.	169	74	146
1932	Value of gross products	million yen	550	275	564
	Manual workers	thousand	220	99	194
	H. P. in use of prime movers	thousand H. P.	169	77	145
1933	Value of gross products	million yen	591	326	660
	Manual workers	thousand	232	108	212
	H. P. in use of prime movers	thousand H. P.	173	81	158
1934	Value of gross products	million yen	651	380	773
	Manual workers	thousand	254	122	250
	H. P. in use of prime movers	thousand H. P.	183	87	185
1935	Value of gross products	million yen	665	396	913
	Manual workers	thousand	258	134	273
	H. P. in use of prime movers	thousand H. P.	186	92	202
1936	Value of gross products	million yen	714	422	966
	Manual workers	thousand	263	150	305
	H. P. in use of prime movers	thousand H. P.	176	101	209
1937	Value of gross products	million yen	1,004	554	1,305
	Manual workers	thousand	317	165	325
	H. P. in use of prime movers	thousand H. P.	247	125	241
1938	Value of gross products	million yen	1,183	666	1,581
	Manual workers	thousand	322	172	341
	H. P. in use of prime movers	thousand H. P.	271	131	267
1939	Value of gross products	million yen	1,752	1,045	2,161
	Manual workers	thousand	437	252	430
	H. P. in use of prime movers	thousand H. P.	296	177	336
1940	Value of gross products	million yen	2,158	1,148	2,476
	Manual workers	thousand	451	237	429
	H. P. in use of prime movers	thousand H. P.	328	180	353
1941	Value of gross products	million yen	2,264	1,342	2,935
	Manual workers	thousand	388	219	415
	H. P. in use of prime movers	thousand H. P.	345	202	432

The above figures exclude the electricity and gas industries.

dix I.

classified by scale of factories

30—50	50—100	100—200	200—500	500—1000	1000 over
583	879	888	1,376	884	1,542
147	193	190	247	206	360
163	212	471	1,174	709	1,322
468	711	703	976	774	982
139	194	190	244	189	240
139	212	458	863	718	886
439	610	616	822	679	740
139	186	172	239	195	233
136	191	327	626	731	800
511	694	701	949	750	974
152	192	190	234	189	256
141	183	321	547	527	718
643	853	870	1,277	1,009	1,626
168	209	200	267	209	267
150	203	327	615	474	847
711	926	865	1,378	1,136	2,449
189	233	217	258	230	403
163	221	340	669	569	1,548
804	1,047	1,147	1,559	1,360	2,924
210	255	238	283	244	465
166	238	451	816	545	1,903
958	1,103	1,196	1,852	1,472	3,484
242	262	246	313	256	547
188	269	467	835	730	2,298
1,198	1,383	1,541	2,356	1,870	5,118
255	263	260	344	275	723
210	280	626	945	735	3,266
1,487	1,659	1,802	2,735	2,094	6,403
276	274	291	375	303	852
250	538	636	1,019	947	3,488
1,840	2,140	2,155	3,235	2,387	8,080
316	314	311	411	331	971
297	347	518	1,281	1,172	3,760
2,075	2,428	2,340	3,388	2,727	8,363
304	324	305	405	348	1,027
303	408	523	1,371	1,356	4,340
2,173	2,774	2,436	3,714	3,131	11,271
275	319	276	400	312	1,306
351	521	711	1,310	1,167	4,772

Appendix II.

(Four particular industries)

Statistical data of P, L, C classified by scale of factories

	Scale of factories by number of manual workers		5—10	10—15	15—30	30—50	50—100	100—200	200—500	500—1000	1000 over
1931	Textiles	P	115.2	56.6	142.4	118.6	181.8	185.5	296.0	374.7	455.9
		L	62.1	29.0	67.1	61.5	102.5	110.7	161.0	151.5	153.3
		C	26.0	11.3	31.5	26.2	42.2	52.9	120.5	180.9	396.5
	Metals	P	34.0	16.7	39.3	36.1	45.8	61.0	59.0	70.0	69.5
		L	13.5	6.9	12.8	9.0	8.9	8.3	8.7	8.0	8.2
		C	10.8	6.3	14.2	14.1	18.6	37.9	65.4	72.4	68.2
	Machinery and equipment	P	34.5	17.8	32.6	32.8	40.7	49.8	94.0	65.8	129.9
		L	19.7	9.0	15.2	12.4	13.1	13.5	18.1	16.0	41.6
		C	10.3	4,8	11.6	10.0	12.9	23.2	82.3	64.5	165.3
	Chemicals	P	50.6	31.1	77.3	63.2	132.8	123.4	173.1	102.5	62.5
		L	8.1	5.2	12.8	11.7	18.4	14.7	21.4	11.0	19.2
		C	19.1	8.8	22.4	26.6	54.1	78.5	197.8	197.0	56.5
1934	Textiles	P	142.9	89.8	212.2	191.5	264.8	267.7	377.0	566.4	1,055.5
		L	69.9	37.6	91.1	75.1	104.4	111.0	144.3	148.4	187.5
		C	30.7	16.6	39.2	31.1	43.8	41.5	82.9	183.7	362.8
	Machinery and equipment	P	47.4	30.0	77.4	68.6	85.3	108.0	119.2	138.3	405.1
		L	28.6	15.4	30.9	23.8	26.1	25.0	29.2	29.4	106.2
		C	12.6	6.7	14.0	12.1	23.4	21.5	36.2	53.5	244.7
	Chemicals	P	68.2	40.3	100.8	121.8	187.7	214.2	327.0	173.9	247.1
		L	10.2	6.5	16.2	17.1	23.1	22.2	26.1	19.0	51.9
		C	14.2	9.4	29.1	44.6	59.5	80.1	204.3	155.9	293.9
	Textiles	P	148.0	104.0	258.3	242.0	302.3	323.6	503.0	660.2	1,113.4
		L	68.5	44.6	105.5	89.8	107.8	108.1	156.3	151.9	195.3
		C	32.2	19.3	45.4	38.8	51.8	59.6	115.5	241.8	495.7

1936	Metals	*P*	54.4	46.4	135.9	139.1	120.6	157.8	230.3	217.6	1,106.8
		L	21.9	16.1	35.8	23.7	22.9	20.5	22.9	23.1	59.9
		C	14.5	10.9	27.8	29.0	34.9	38.9	84.4	128.1	764.3
	Machinery and equipment	*P*	56.0	42.5	100.2	104.8	130.4	134.4	238.6	207.7	701.8
		L	33.2	21.3	43.6	37.1	37.1	34.7	39.2	39.8	171.0
		C	15.9	9.3	20.0	18.8	25.9	29.4	41.2	63.3	374.9
	Chemicals	*P*	87.4	48.1	137.6	145.7	242.0	276.1	430.0	313.1	430.9
		L	11.2	7.1	20.4	20.1	25.6	26.1	37.6	28.2	97.2
		C	15.4	12.1	29.4	39.8	68.3	95.7	241.5	260.1	616.2
1939	Textiles	*P*	375.7	240.9	484.2	370.9	441.7	441.1	710.1	789.5	959.8
		L	120.2	69.7	125.3	89.9	95.2	102.0	151.8	153.8	159.4
		C	46.7	28.7	62.8	48.5	61.0	69.3	154.2	336.8	438.0
	Metal	*P*	157.2	122.2	304.8	301.6	255.2	282.9	472.1	520.6	3,164.3
		L	33.5	24.2	47.9	35.6	31.1	29.5	44.3	37.7	161.4
		C	28.6	23.2	53.4	51.0	48.1	65.6	140.9	218.3	1,323.2
	Machinery and equipment	*P*	177.6	149.2	372.8	370.7	445.7	425.2	571.1	475.7	2,604.1
		L	64.8	46.8	90.5	75.8	85.3	84.1	106.5	83.9	493.9
		C	37.3	27.5	55.7	55.8	60.6	75.4	105.1	97.3	758.5
	Chemicals	*P*	171.7	127.5	293.0	269.5	433.4	499.0	777.9	456.7	1,246.6
		L	23.2	16.7	30.6	27.6	31.7	38.8	54.0	37.0	137.5
		C	20.3	15.8	46.3	51.0	88.1	134.0	394.7	407.9	1,183.3
1942	Textiles	*P*	401.0	213.1	437.5	302.7	421.3	371.0	707.7	539.0	576.0
		L	89.6	47.2	88.6	59.0	76.3	68.1	124.8	90.8	90.8
		C	43.0	22.9	51.1	36.8	80.0	85.6	157.0	194.0	210.1
	Metals	*P*	190.6	143.8	361.8	274.0	335.9	288.4	536.7	624.1	4,276.7
		L	33.6	21.1	44.4	28.8	32.2	25.8	41.7	37.6	180.2
		C	44.4	28.3	69.0	60.3	75.7	80.8	183.5	173.5	2,114.1
	Machinery and equipment	*P*	319.2	227.5	633.2	586.6	730.3	692.3	991.0	1,164.3	5,237.5
		L	70.1	45.0	101.2	84.0	101.4	100.8	142.1	128.2	909.9
		C	49.5	33.1	83.1	79.3	110.8	112.1	175.7	184.1	1,350.4
	Chemicals	*P*	225.0	175.2	422.0	378.6	546.7	582.0	930.2	606.4	1,145.3
		L	21.8	15.5	32.7	26.1	36.0	34.9	49.2	38.6	118.3
		C	29.2	24.2	62.2	76.9	127.3	227.8	383.6	518.7	1,089.5

P = Value of gross products ; L = Number of manual workers ; C = Horse Power in use by prime movers.
Unit : P=million yen ; L=thousand men ; C=thousand H. P.

OF THE LOGICAL CHARACTER OF THE MONETARY ECONOMY

THE METHOD OF "SOCIAL ACCOUNTING" AND THE CONCEPT OF "BALANCE" OR "ASSETS AND LIABILITIES" AS A METHOD OF ANALYSIS OF THE MONETARY ECONOMY

By TAIZO TAKAHASHI

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I. *Problem of "Physiology" and "Anatomy" of Economy*

The Social Framework—An Introduction to Economics (Oxford, 1942), by J. R. Hicks (the American edition is titled as *The Social Framework of the American Economy*, New York, 1945 by J. R. Hicks and A. G. Hart), though it is an introduction to economics as indicated by its subtitle, presents an interesting problem of method to grasp economic phenomena, or the structure and system of economic theory. So far as the problem of this new structure of economic theory is concerned, his work, as described in its preface, adopted a method of proceeding from the concept of national income which should give a pictorial representation of the scale of national economy, and which would enable biginners to comprehend with ease the science of economy, instead of the method of former theories which proceed from the concept of marginal analysis or the theory of value so hard for beginners to comprehend. Besides, as stated at the finis of this book, characterizing the former economic theory founded on the theory of value as "physiology" of economy, and the so-called macroscopic analysis of national income as "anatomy" of economy, he attempted thereby to give a solution to the problem of the structure and system of economic theory which has remained unsettled with conflicting or parallel tendencies between the so-called "microscopic analysis" and "macroscopic analysis" since Keynes' *General Theory* (London, 1936) appeared. For, instead of the distinction between these two analysis which is, so to speak, methodological, any attempt to characterize the former economics of value theory as "economic physiology" and the new economics of national income theory as "economic anatomy" should shed light on the meaning of their respective methods and accordingly the relationship between these two, whereby a clue toward the construction of new system of economic theory would be suggested. In the same sense, P. A. Samuelson's *Economics, An Introductory Analysis* (New York, 1948), which proceeded from an analysis of national income and closed with the theory of price, can be said to have not less importance in realizing a method of description and a new structure of the economic theory, as above mentioned.

There is another important problem to discussed in reference to this new structure and system of economics. In order to understand the method adopted in the "economic anatomy", also the reason why the so-called "macroscopic analysis" may be considered as "economic anatomy", and in order to thus find out a means by which the "economic anatomy" as an anatomy of monetary economy can be further connected with the economic physiology, it ought to be made clear that the method of "Social Accounting" there adopted only to the analysis of the anatomy of the goods economy, when viewed by the standpoint of monetary economy, will yet leave an important problem to be solved. The chief purpose of this paper is rather to deal with the latter problem about which I took a hint from the concept of "assets and liabilities" of individual enterprises and households, on which was based the method of "Social Accounting", in spite of its important methodological concept, as used for the purpose of calculating the net total of the economy of a country from the point of anatomical analysis. This is the reason why we shall, in the following, begin our discussion with a recognition of the meaning of the concept of "Social Accounting", especially as a foundation of "economic anatomy".

II. *"Economic Anatomy" by the Concept of "Social Accounting"*

In the aforesaid book, Hicks endeavours to grasp the scale of an economic community or national economy as a whole and its flows chiefly with the concept of national income or national output. In this sense his method is none other than the so-called macroscopic analysis. There is, however, a keypoint in the fact that the method of "Social Accounting" is taken as a means of grasping the scale of national economy as a whole, and this method, according to his expression, is "economic anatomy".

Hicks begins with attempting to grasp the scale of national economy as a whole and its flows in terms of national capital which consists of real goods used in the productive process, and for the purpose of calculating the national capital, he adopts the method to cancel out the assets and liabilities of enterprises and households, by drawing up a combined balance sheet of individual economic subjects constituting the economic community. The net total, accordingly real capital, i.e. national capital as real capital would thus be computed. In other words, he defines this cancelled-out capital as national capital to be regarded as the net total, the following table being given as an example (see above p. 97):

	Liabilities	£	*Assets*	£
Company :	a) Shares and bonds	150,000	Capital goods	150,000
Shareholders :	..	..	Capital goods	20,000
			a) Shares and bonds	150,000
Company and shareholders together :	..	..	Capital goods	170,000

The above table shows shares and bonds, as the company's liabilities (marked a) and the capital of the share- and bondholders (marked a) is balanced in the sense of social total, and in consequence, that it comprises the total value of capital goods possessed by individuals and companies that can be reckoned as capital in the sense of the national economy, that is, as net capital. This is a self-evident fact, and the procedure from which this fact is derived is called "Social Accounting". However, when this "Social Accouting" is taken as the base of "economic anatomy", the following two important points should be noted. One is the meaning and the use of the word "Social", which is, however, quite different from those of "Society" or "Social" as used in the former value-theory economics, but constitutes the theory of an economic society. The other is the more essential problem, whereby we can make obvious the reason why the method of total grasping or macroscopic analysis is not physiological, but anatomical.

The object of the former economic theory such as the theory of value or the theory of marginal analysis which Hicks calls economic physiology, was "an economic society", composed of individual economic subjects or goods and was counted as the relationship between these units. That which we hitherto usually understood and expressed by the word "society" was really, we can say, the "society" in the sense of relationship between the constituent parts or the homogeneous units, but not in the aggregate sense. At the same time it is a matter of importance that the constituent parts of the society are grasped, as it were, as living and active individuals, and we shall be able to ascertain the appearance of this fact, i. e. their action in their "assets and liabilities". However, the whole grasped here as "Social Accounting" is a total of the national economy. Therefore, "Social Accounting" may be called, in this sense, only an accounting of the national economy. It was also from the same point of view that Hicks defined output as social (or national) output. Therefore, the important matter is neither the way of expression nor the terminology, but the methodological meaning and the effect of this method.

This is, as above described, that by the process the whole is reduced to a single figure of the aggregate——also when analyzed from another angle——the respective corresponding items on both sides of "assets and liabilities" cancel out each other. This means that prior to the cancelling-out, individual economic subjects exist and are treated as living and active units, which work and act, having their own respective accounts of "assets and liabilities", and that they lose such character through the cancelling-out process, in other words, that they are dealt with from a different viewpoint than if they continued to retain their character.

The so-called "marginal analysis" is a concept based on the principle of human action itself, i.e. action of individual economic subjects, and "value" or "price" is what reflects itself on phenomena which individual commodities cause on the market. Accordingly, it can be said that such analysis describes the way the economy is working which is equivalent to "economic physiology". This is also the meaning of what Hicks calls "marginal anlysis" or the "theory of value" named "economic physiology". On the contrary, the whole scale of the economic community or national economy computed by the above method and an analysis of its flows as a whole is not concerned with physiology, the working of the economic organism, but with the structure of the economy as a whole. This is the reason why Hicks calls this method "anatomy". (He used both descriptions of the economic organism and the explanation of its various constituent organs included in the economic anatomy on which he dwelled in the first part of this book. The same description——in contents and arrangements ——is also contained in Samuelson's book.) The various attempts at interpretation of the macroscopic analysis, of the procedure of "Social Accounting" and the meaning of a series of analyses based on phenomena not concerned with physiology, but with anatomy, should give an important suggestion for the understanding of general character of the so-called macroscopic analysis.

III. *The "Balance" Theory of Monetary Economy*

After having explained the concept of macroscopic anatomy as a method of analysis of the national economy as a whole, Hicks proceeds to the analysis of social output or social income. In this analysis, we can see two noteworthy features.

First, he assumes the flow of economy as a phenomenon of the relationship between social capital and social output or social income; second, he analyses social output or social income as separated by "earning side" and "spending side". In regard to the latter, he presents a formula summed up in the following equations.

Earning Side:

$$\mathit{Social\ Output} = \begin{array}{c}\mathit{Wages}\\ + \\ \mathit{Profits}\end{array} = \mathit{Social\ Income}$$

Spending Side:

$$\textit{Social Income}=\begin{array}{c}\textit{Consumption}\\+\\\textit{Saving}\end{array}=\begin{array}{c}\textit{Consumption}\\+\\\textit{New Investment}\end{array}=\textit{Social Output}$$

In discussion not the former, but rather the latter, as being concerned with the analysis of social income separated by earning side and spending side, we come upon a new idea in grasping output or income in a serial process of transformation and in assuming these two processes in series and on an equality with each other. However, this view cannot be said to be essentially different from the "principle of equality among three stages" of national income. Also it is social output or social income that for the analysis of its flow process is dealt with separately on both sides of earning and spending, the respective corresponding items of which are regarded to be synonymous or equivalent with each other. This point, which is also made out by Hicks reveals that the so-called macroscopic analysis of the national income leans toward grasping the aggregate scale of economy one-sidedly. For, by ignoring that our actual economy is "monetary economy", this analysis results in envisaging the scale and structure of the economy merely in the aggregate or macrospically of the economic anatomy, as mere anatomy, not to be linked with physiology.

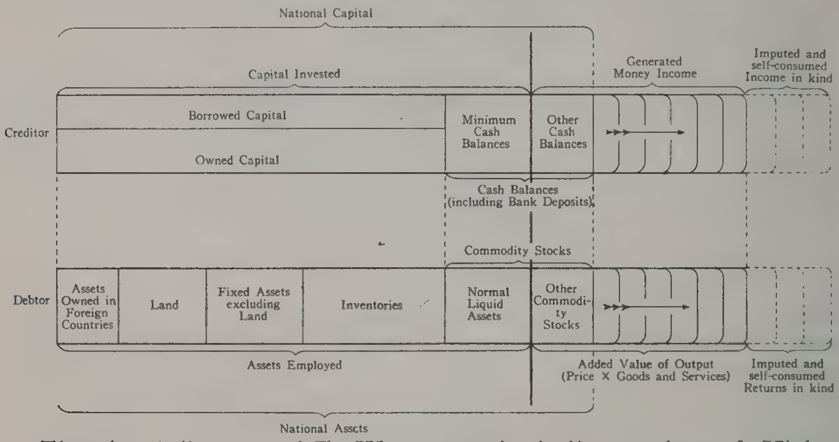
Thus we now feel a need to trace the problem of a method to grasp the monetary economy at its source, in order to understand economic phenomena more actually, and also to reconsider the "equation of exchange" which I. Fisher presented as such a method as could grasp the monetary economy in the aggregate or macroscopically. Though this "equation of exchange" $MV=PT$ gives rise as already often pointed out to many problems and has some defects——for instance, in indicating the aggregate of transactions in a fixed period, but neither the substantial (or real) scale, nor the structure and the flow of the economy——which are of great importance, however, it shows some way for a link to the physiological analysis of the monetary economy which is grasped in the relation of counter-balance between the goods side PT and the money side MV, and also contains in this relation the facts of the determination of the price level.

By reviewing this point, we can observe that the "equation of exchange" has a feature like a "balance sheet" of the monetary economy in the aggregate. The notion of "Social Accounting" by which Hicks attempted to grasp the economic community as a whole rested on a method that real capital only is reckoned as assetes of the whole national economy, all debtor and creditor accounts among individual enterprises and persons being balanced, namely both sides of goods and money in the relation between assets and liabilities cancelling out each other. Accordingly, while the "equation of exchange" has a very important significance in expressing its above character of money economy, i.e. that the goods side and the money side are in the relation between assets and liabilities, it appears very unsatisfactory in that, from such viewpoint and expectation, this equation does add nothing more than to divide total transactions in a fixed period into goods and money, and in consequence consider these in the relation of balance and equation, but without explaining the raison d'etre and the meaning of this relation, in other words the character of the monetary economy and the significance of its flow. The problem of why the equation between goods and money exists, is fundamentally the problem for what reason money is issued or introduced in the economic circulation, and the explanation of this problem should make clear the meaning of balance and counterbalance between goods and money, and the ground on which goods and money in the monetary economy stand in relation of debtors and creditors or of assets and liabilities which constitute the balance sheet of the monetary economy.

In this sense, it was the "ticket theory of money" (Anweisungstheorie) by German nominalists (such as F. Bendixen, K. Elster etc.) which explained the grounds on which money is issued or introduced in the economic circulation and constructs the balance relation with goods and moreover whatever principle on which money is created. This theory states that money is delivered by the community (Gemeinschaft) due to or in proof of supply (Leistung) of goods and services by individual persons and enterprises, and accordingly, that money is in a balance relation with products (goods and services) existing in the community and represents rights of demand (Anrecht der Gegenleistung) or rights of participation (Beteiligungsmittel) to the social product. In this sense, it gives a view of money, more exactly a view of the monetary economy, which explains at the same time the meaning of the flow of the monetary economy, though this explanation is nothing but a plain figure.

However, whilst, as regards the goods side, in terms of social product (Sozialprodukt) or consumable goods (Konsumtionsfond) the idea of "national produce" or "national output" is taken into account, on the money side the rights of demand represented by money are only terminologically expressed without being developed to the concept of "national income". Viewed from this point, J. Schumpeter's "fundamental equation of monetary economy" (Grundgleichung der Geldtheorie) —— $E=M \times U= p_1 q_1 + p_2 q_2 + p_3 q_3 + \cdots\cdots + p_n q_n$ —— can be said to be epochal in explaining that income on the money side stands in a balance relation with consumable goods and services on the goods side, this view being based on the "ticket theory of money". Besides E. Wagemann's "balance theory of prices" (Die Bilanztheorie der Preises) which was developed in his work, *Allgemeine Geldlehre* (Berlin, 1923), should be especially noted in the sense that he attempted to grasp the goods and money side in a relation of debtor (Aktiva) and creditor (Passiva) account or assets and liabilities.

E. Wagemann, who is well known as the author of *Konjunkturlehre* (Berlin, 1928), *Struktur und Rhythmus der Weltwirtschaft* (Berlin, 1931) tried to draw various diagrams on the flow of economy and also developed the idea of the "ticket theory of money" in his later work, *Wo kommt das viele Geld her?* (Düsseldorf, 1940) This being so, the diagramatic representation of national product and national income stated in the above mentioned *Allgemeine Geldlehre*, his earliest work is full of suggestion in which he tried to understand the monetary economy in a balance relation by expressing national product and national income respectively in a relation of debtors or assets and creditors or liabilities, and to establish a theory of prices based on it. This is shown in the following chart.



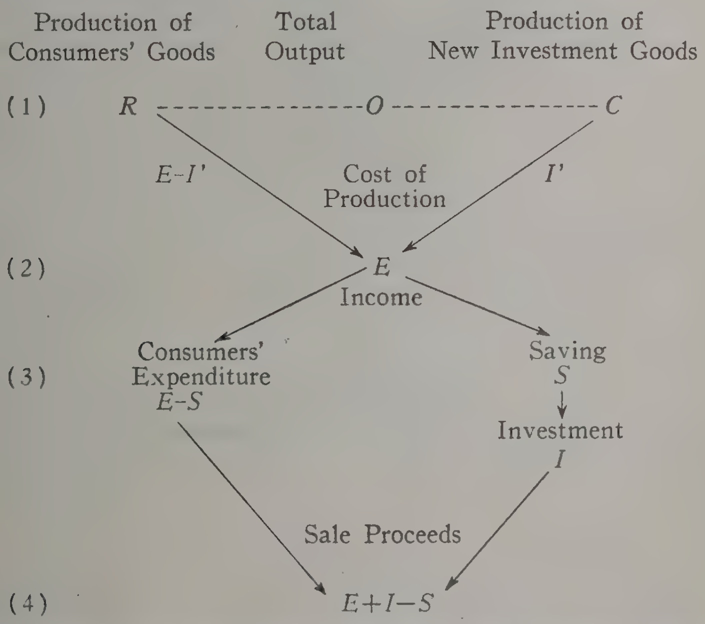
The above diagram of E. Wagemann is similar to that of Hicks in attempting to grasp national product and national income at the source of the formation of national capital and national property, but it is, we can say, in contrast to the earlier "equation of exchange" in which he took national product and national income as representing the real scale of the economy and then formulated the so-called "income theory of money", and at the same time made both clear in the balance relation of debtors and creditors.

IV. *Fundamental Equation of Keynes*

As above stated, Wagemann's diagram implies the idea of the monetary economy in the form of "equation of exchange", with goods as assets and money as liabilities, but his further intention was to grasp the flow of national economy as a continuous series of equation on each side and at each stage as follows:

(1) *Price × Utility Income Produced*
(2) = *Cost of Production (incl. Business Profit) = Income*
(3) = *Consumers' Expenditure + Savings*
(4) = *Utility Income Consumed and Utility Income Capitalized × Price*

The above analysis of the flow of economy, the first stage indicates the value of products expressed by money, the second stage the expenses of production and accordingly the income thereof, the third stage the distribution of income, and the fourth stage the distribution of the consumption of goods produced respectively, and it may be said just the same way as Keynes later intended to represent them in his "fundamental equation", because, according to the diagramatic version attempted by Dr Hayek, they are presented as follows:



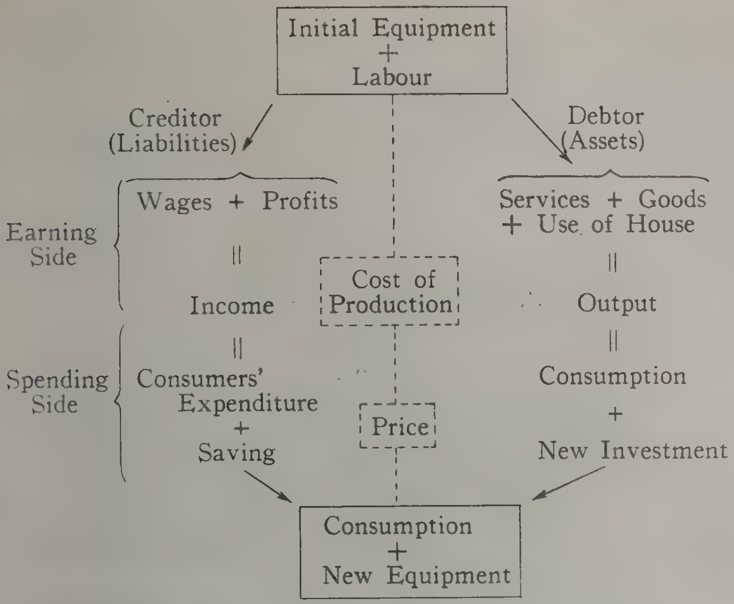
The above should give us a clue to reconsider the meaning of Keynes' "fundamental equation". His view of money, which was developed in *Treatise on Money* (London, 1930), is just like the ticket theory of money, and was embodied in the structure of "fundamental equation". This fact can be observed in the balance relation between output and income, which is indicated as a method of grasping national output and income in relation of creditors and debtors constituting the monetary economy. By assuming that income equals the sum of "cost of production of consumers' goods"

$(E-I')$ and "cost of production of new investment goods" (I'), the "fundamental equation" would indicate the ground or source from which income is formed at the starting of the flow, and also by assuming that "sale proceeds" $(E+I-S)$ consist of the sum of "consumers' expenditures" $(E-S)$ and "investment" (I), and in taking "the price level of the total output" as $\pi=\frac{E}{O}+\frac{I-S}{O}$, "the price level of consumers' goods" as $P=\frac{E}{O}+\frac{I'-S}{R}$ (the price level of new investment goods as $P'=\frac{E}{O}+\frac{I-I'}{C}$, though not set out by Keynes himself), this would indicate the counterbalance relation between goods and money in the destination of the flow, even if the "fundamental equation", in so far as it is confined within the scope of the observation of national net product and national income, would yet leave a big question.

This "fundamental equation", which is based on the concept of the balance relation constituting the monetary economy, would suggest a way toward a link with the physiology of the monetary economy, introduced as a question in the previous chapter, as it is an equation of the price level and is composed of two terms denoting cost of production and windfall profits respectively. Because the aforesaid three price levels consist of their respective counterbalance relations between output and purchasing power, namely $\pi=\frac{E+I-S}{O}$, $P=\frac{E-S}{R}$, $P'=\frac{I}{C}$, and the last two of these equations are constructed as follows: $P=\frac{E-I'}{R}+\frac{I'-S}{R}$, $P'=\frac{I'}{C}+\frac{I-I'}{C}$, of which the denominator of the first term should denote the respective output, and the numerator denote income from the respective output or cost of production, identical to the first equation.

Let us compound Hicks' view of observing the flow of economy as mentioned previously, and another view of taking output and income or money as the balance relation of debtors and creditors, then we shall have an illustration set out on the next page.

In short, in order to link the macroscopic or anatomical analysis of economy to the economic physiology, it is necessary to grasp the monetary economy through the method of analysis based on the balance theory of creditors and debtors. This means that the value of product (cost expressed by money) and the income thereof are equivalent to each other, in other words, these two stand on the common basis of cost of production. This fact that the macroscopic anatomical analysis must be based on the concept of cost of production, should suggest a link with the physiological analysis of economy. Moreover, this should indicate the relationship between money as a logical concept and money as purchasing power. The concept



of money as the logical basis of the economic world or as a possible condition of general equilibrium has been much discussed, but the recent monetary theory, as above stated, has made it clear that money is the form of expression of value or cost of products, and is also the means to realize income, in other words, the form of income in the monetary economy. Thus I think that it should indeed suggest a logic by which the physiological character of monetary economy which really works by means of money circulation could be connected with its anatomical character.

FUNDAMENTAL PROBLEMS OF COMPARATIVE STATICS

By Masao Hisatake

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I. *Introduction*

The object of comparative statics is to analyse and describe the shifts of economic equilibrium caused by changes of data. These are the main subjects contained in the theories of Pigou, Keynes, Hicks and Samuelson. But the method of analysis, especially the method to treat the change of the shape of a function, has not yet been fully examined. It is necessary to reexamine this method in order to obtain results in more details, and to clear up the problems exhaustively.

From the standpoint of pure mathematics there exist difficult problems, but it is not hard to obtain an exactitude sufficient for economic application. The question is to find a method of approximation which will express the variation of a function with a minimum number of parameters and yet does not miss the important economic problems. In the following I will describe my method and its tentative application.

II. *Comparative Statics and Equilibrium Theory*

In the system of equilibrium equations, economic data are given as parameters or functional relations. For example, population is a parameter and technique of production is expressed by a production function. The first step of the equilibrium theory is to find the essential variables and ascertain necessary and sufficient data which determine the values of the variables, and to express the relations between data and variables with the system of equations. It is difficult to solve these equations, but they are used to analyse most important economic problems as shown by Walras, Pareto and other authors.

The second step of the theory is to examine the stability of the equilibrium values. The equilibrium is said to be stable if the restoring movement occurs whenever the actual values diverge from equilibrium values, and unstable if the divergency becomes larger with time. The equilibrium is said to be neutral if it is fixed to the new removed position. The earlier equilibrium theories such as those of Cournot and Walras were much concerned to analyse the stabilizing process, assuming the equilibrium to be stable. But recent theories such as those of Hicks and Samuelson have analysed the various cases of stability and instability, with the intention to clear up the conditions for stability.

The third step is to analyse the shifts of equilibrium values when the data change. This is the object of comparative statics. When we deduce theorems on comparative statics, we must necessarily assume stabilizing conditions. Therefore, there exists a logical connection between comparative statics and stabilizing conditions. This is the "correspondence principle" so named by Samuelson.[1]

The primitive theories of comparative statics were presented by Cournot, Walras, Marshall and Divisia. Cournot treated tax rate as a parameter, and analysed the effect of a change in tax rate on price and output under a monopoly and free competition. Marshall and Divisia used the graphical method in order to explain the effect of functional variation upon equilibrium values. Walras treated changes of parameters or functional relations with a literary method. Excepting Cournot, these methods were so simple that they could not add much to our knowledge.

The equilibrium theory, as far as statics is concerned, is most fruitful in the third step. According to Samuelson the object of economic analysis is to deduce a "meaningful theorem". Most of his achievements in *Foundations of Economic Analysis* are meaningful theorems deduced by means of comparative statics. The theories of Pigou and Keynes which contain many meaningful theorems both belong to comparative statics.

Changes of data, as mentioned above, are expressed in two different forms, one of which is the variation of parameters. For example, Hicks treated income or price as a parameter in his theory of consumers' demand. The other is the variation of a function. For example a change of taste is expressed by the shift of utility function, and a change of productive efficiency is expressed by the shift of a production function. These cases were analysed by Pigou and Samuelson.

III. *Comparative Statics and Stabilizing Process*

Comparative statics is based on the assumption that equilibrium is stable. But it requires more than stability. The process of adaptation to the variation of data is realized through a long causalistic movement towards equilibrium. This process can be analysed into two parts, the normal process of adaptation without any oscillations, and the oscillating movement around the normal process. We assume that both processes are realized in an instant, that the velocity of adaptation and the velocity of convergency are both infinitely large.

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[1] P. Samuelson, *Foundations of Economic Analysis* (Cambridge, 1949), pp. 5, 258.

But in reality these velocities are not infinite. We must be careful when we apply our conclusions to actual questions. Generally speaking, comparative statics can explain the actual process when the system converges more rapidly than the process of adaptation. For example when productive efficiency increases on account of technical improvement, price fluctuations converge more rapidly than the change of equilibrium values, because it takes a rather long time to replace machines and trained workers. On the contrary, when the capital market is in process of converging to its normal position, it is not realistic to describe the results of the change in liquidity preference by the method of comparative statics. Because the converging velocity of the capital market is considered to be smaller than the adapting velocity to the liquidity preference.

In this case we can explain the actual movement by transposing the converging process and adapting process. This is one of the applications of the "transposing principle" which is widely used in physics and astronomy. But process analysis is the subject of dynamics. Comparative statics describes the final result and not the process of change. We should not expect it to explain the actual process except in special cases.

IV. *Approximating Expression of Functional Variation*

As explained above, variation of data is expressed in two ways. When it is expressed as change of parameter, we can deduce the theorems on comparative statics by differentiating each variable with this parameter and by examining the sign of this derivative. When it is expressed as a functional variation, however, we have to consider first of all, how to express it analytically.

We have hitherto two methods, one of which was adopted by Pigou, and the other by Samuelson. Let the variables be $x_1, x_2, \ldots\ldots\ldots\ldots x_n$, the original function $f(x_1, x_2, \ldots\ldots\ldots\ldots, x_n)$, and the changed function $g(x_1, x_2, \ldots\ldots\ldots\ldots, x_n)$. Pigou's method in its general form is expressed in the following equation.[2]

$$g(x_1, x_2, \ldots\ldots\ldots, x_n) = cf(x_1, x_2, \ldots\ldots\ldots, x_n)$$

where c is a parameter. $c=1$ in the intial position, and is more or less than unity according to the direction of change. For example, let x_1 etc.

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[2] A. C. Pigou, *Economics of Stationary States* (London, 1935), p. 269.
He applied this method to one variable function. Thus he puts $g(x) = cf(x)$.

be quantities of productive factors and f and g production function. $c > 1$ denotes the increase of productivity. So we can judge from the sign of $\frac{dx_1}{dc}$ etc. whether the factor used increases or not.

Samuelson's method is to use a finite number of parameters.[3] Let the parameters be $a_1, a_2, \dots\dots\dots, a_m$ and he expressed the function z as follow:

$$z = f\,(x_1 \dots\dots\dots x_n,\ a_1 \dots\dots\dots a_m)$$

The function in the initial position is shown by fixing the values of parameters as $a_1^o, \dots\dots\dots, a_m^o$. If, for example, f being production function, we express with a_i the productive efficiency of the factor x_i, the variation of x_i resulting from the increase of the productivity of those factors can be judged by the sign of

$$dx_i = \sum_{j=1}^{n} \frac{\partial x_i}{\partial a_j} da_j$$

Actually it is difficult to determine the sign when the parameters are numerous. In some cases Samuelson uses only one parameter, and adopts the function [4]

$$z = f\,(x_1 \dots\dots\dots x_n,\ a) \quad .$$

or otherwise, he assumes that $\frac{\partial x_i}{\partial a_j}$ $(i \neq j)$ is so small that it can be neglected.[5]

Theoretically, Samuelson's method is more general than Pigou's method. The latter assumes that a function shifts upwards or downwards in proportion to its magnitude. This is approximately true in the small domain of variables and for the small variation of the parameter, but it is not exact when the domain is large, or for the large variation of c. The former method, however, can be made almost exact if we take a large number of variables. But if we take only one variable as Samuelson does in some cases, the degree of approximation is not necessarily so high as in the latter method.

Theoretically the number of behaviors of functional variations of $f\,(x)$ corresponds to transfinite number, i. e. non-countable infinity. It is therefore impossible to express these variations even with countable infinite numbers of parameters. We have to specify the form of the function if we wish to do so. We assume, therefore, that the function $f\,(x)$ is analytic and can be expanded into power series. If we take the coefficient of each term as a parameter, and express $f\,(x)$ as

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[3] *Foundations*, p. 29.

[4] *Ibid.*, p. 34.

[5] *Ibid.*, p. 36.

$$f\ (x,\ a_0,\ a_1,\ \ldots\ldots\ldots)$$

we can approximate every kind of functional variation with the variation of these parameters.

For practical purposes even this function is too complicated. It is enough to express $f(x)$ as power series of finite degree. And when the domain of x is small, we need only a few terms of x for our purpose. Now if we adopt polynomials in x of m degree, we have $m+1$ parameters, and the function is expressed as

$$f\ (x,\ a_0,\ a_1,\ \ldots\ldots\ldots,\ a_m) \tag{1}$$

which Samuelson has adopted. The less the number of parameters, the lower the degree of approximation, but the more simple for treatment. If we intend to minimize the number of parameter, we have a linear equation for the small domain of x, and the function becomes

$$f\ (x,\ a_0,\ a_1) = a_0 + a_1 x \tag{2}$$

In general we cannot reduce the number of parameters further, but in special cases we might put

$$f\ (x,\ a_0) = x + a_0 \quad \text{or} \quad = a_0\, x \quad \text{or} \quad = x^{a_0} \quad \text{etc.}$$

If the function involves n variables, we need at least $n+1$ parameters including constant terms, i. e.

$$\begin{aligned} & f\ (x_1\ \ldots\ldots\ldots\ x_n\ ;\ a_0\ \ldots\ldots\ldots\ a_n) \\ & \qquad = a_0 + a_1\, x_1 + \ldots\ldots\ldots + a_n\, x_n \end{aligned} \tag{3}$$

In general, to approximate a function with power series, we need at least one more parameters than variables. Therefore it is inadequate to use one or an arbitrary number of parameters as Samuelson has done.

Another method of approximation is to expand the difference between $g(x)$ and $f(x)$ into power series. Putting

$$g\ (x_1\ \ldots\ldots\ x_n) - f\ (x_1\ \ldots\ldots\ x_n) = \phi\ (x_1\ \ldots\ldots\ x_n) \tag{4}$$

and expanding $\phi\ (x_1\ \ldots\ldots\ldots\ x_n)$ into Maclaurin series, we have

$$\begin{aligned} \phi\ (x_1 \ldots\ldots\ldots x_n) &= \phi\ (o \ldots\ldots\ldots o) + \Sigma \frac{\partial \phi}{\partial x_i}\, x_i \\ &= a_0 + \Sigma\, a_i\, x_i \end{aligned}$$

$$\therefore \quad g\ (x_1 \ldots\ldots\ldots x_n) = f\ (x_1 \ldots\ldots\ldots x_n) + a_0 + \Sigma\, a_i\, x_i \tag{5}$$

In case of one variable, we have

$$g\ (x) = f\ (x) + a_0 + a_1\, x \tag{6}$$

This equation presents us a curve instead of a straight line, so we can have a higher degree of approximation than by the former method with the same number of parameters. We might even use only one parameter as

$$g(x) = f(x) + a_0 \tag{7}$$

or

$$g(x) = f(x) + a_1 x \tag{8}$$

as a general approximating formula.

In the case of n variables, we might use instead of (5)

$$g(x_1 \dots\dots\dots x_n) = f(x_1 \dots\dots\dots x_n) + a_0 \tag{9}$$

or

$$g(x_1 \dots\dots\dots x_n) = f(x_1 \dots\dots\dots x_n) + \Sigma\, a_i x_i \tag{10}$$

Sometime Samuelson uses these simplest forms. For example he adopts the formula (9) for consumption or investment function in Keynesian system [6]. He also uses formula (10) in another case.[7]

The third method is to express $g(x_1 \dots\dots\dots\dots x_n)$ as a function of $f(x_1 \dots\dots\dots\dots x_n)$ and to find an approximation of this function. In this case also, $g(x_1 \dots\dots\dots\dots x_n)$ can be expressed with the power series of $f(x_1 \dots\dots\dots\dots x_n)$, and among them the simplest formula is a linear equation;

$$g(x_1 \dots\dots\dots x_n) = a_0 + a_1 f(x_1 \dots\dots\dots x_n) \tag{11}$$

This method uses less parameters than the former method, for we need at least $n+1$ parameters in formula (5). But the above method is limited in its application, because $g(x)$ is fixed as a one-valued function of $f(x)$ according to the nature of power series. Therefore $g(x)$ has a maximum or minimum whenever $f(x_1 \dots\dots\dots\dots x_n)$ has a maximum or minimum. If for instance $g(x)$ increases monotonically while $f(x)$ increases at first and then decreases, we have two values for $g(x)$ against one value of $f(x)$, and $g(x)$ becomes two-valued function of $f(x)$. In this case g cannot be expressed as a power series of f.

If two functions rise and fall together or one rises while the other falls, we find correlation between them. When the correlation is linear, the formula (11) is a good approximation, and the larger is the coefficient of correlation absolutely, the larger is the degree of approximation. In this case we get a good formula with only two parameters. In a special case where g is proportional to f, we get

$$g(x_1 \dots\dots\dots x_n) = a_1 f(x_1 \dots\dots\dots x_n) \tag{12}$$

which is the general form of Pigou's approximation.

Now let us compare the three methods explained above. The first method is superior when we wish to specify the form of the function. The second and third methods do not give us the actual form of the function. But the second method provides us with a higher degree of approximation for the same number of parameters. The third method is also superior as for approximation, but it applies only to special cases where $f(x)$ correlates to $g(x)$ to a high degree. Moreover, when we have more than two variables, the third method cannot specify the variation attributable to each variable. In the first or second method, the coefficient of linear terms express the effects mainly attributable to each variable. Let the function be

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[6] *Foundations*, p. 276.

[7] *Ibid.*, p. 51.

$$f(x_1 \,\ldots\ldots\ldots\, x_n)+\alpha_0+\sum_{i=1}^{n}\alpha_i x_i+\sum_{j=1}^{n}\sum_{i=1}^{n}\alpha_{ij}x_ix_j+\,\ldots\ldots \tag{13}$$

Then α_0 shows the variation independent of all variables, and α_i the variation dependent on x_i, and α_{ij} the variation dependent on x_i and x_j, and so on.

From these considerations we arrive to the conclusion that the second method is the most applicable to general cases and easier for treatment. I think it is best to adopt this method for the general theory of comparative statics.

V. *Comparative Statics applied to Keynesian System*

As an example let us apply our method to the Keynesian system. According to Samuelson the Keynesian system can be summarized into three equations as follows:

$$\left.\begin{array}{l} Y=C(i,\ Y)+\alpha+I \\ I=F(i,\ Y)+\beta \\ M=L(i,\ Y) \end{array}\right\} \tag{14}$$

where i, Y, I stand respectively for the interest rate, income and investment; C, F, L stand respectively for the consumption function, the investment function, and the schedule of liquidity preference. M stands for the existing amount of money; α represents an upward shift of consumption function; similarly β represents the increase of the marginal efficiency of capital.

We get a higher degree of approximation by rewriting these equations as follows:

$$\left.\begin{array}{l} Y=C(i,\ Y)+\alpha_0+\alpha_1\cdot Y+\alpha_2\cdot i+I \\ I=F(i,\ Y)+\beta_0+\beta_2\cdot i+\beta_1\cdot Y \\ M=L(i,\ Y) \end{array}\right\} \tag{15}$$

where α_0, α_1 and α_2 stand for the shift of consumption function, and β_0, β_1 and β_2 for the shift of investment function. If we confine ourselves to the shift of consumption function, the above equations are simplified:

$$\left.\begin{array}{ll} C(i,\ Y)-Y+\alpha_1\ Y+I & =-\alpha_0 \\ F(i,\ Y)\qquad\qquad\quad -I & =0 \\ L(i,\ Y) & =M \end{array}\right\} \tag{16}$$

where $\alpha_2 \cdot i$ is neglected because the change of consumption is considered almost independent of interest rate. The increase of α_0 stands for income-independent upward shift, and of α_1 for income-proportional upward shift. Now for $\frac{\partial i}{\partial \alpha_0}$, $\frac{\partial Y}{\partial \alpha_0}$ and $\frac{\partial I}{\partial \alpha_0}$, the result is similar to that already derived by Samuelson[8]. Differentiating totally with α_0 and solving the resulting linear equations, we have

$$\frac{\partial i}{\partial \alpha_0} = \frac{-L_Y}{\triangle} \tag{17}$$

$$\frac{\partial Y}{\partial \alpha_0} = \frac{L_i}{\triangle} \tag{18}$$

$$\frac{\partial I}{\partial \alpha_0} = \frac{F_Y L_i - F_i L_Y}{\triangle} \tag{19}$$

where

$$\begin{aligned} \triangle &= \begin{vmatrix} C_i & C_Y - 1 + \alpha_1 & 1 \\ F_i & F_Y & -1 \\ L_i & L_Y & 0 \end{vmatrix} \\ &= L_Y (F_i + C_i) + L_i (1 - C_Y - F_Y - \alpha_1) \end{aligned} \tag{20}$$

We know that

$$C_Y > 0,\ F_Y > 0,\ F_i < 0,\ L_Y > 0,\ L_i < 0 \tag{21}$$

and $C_i \gtreqless 0$, but C_i is so small in absolute value that it can be neglected.

In order to evaluate our derivatives $\frac{\partial i}{\partial \alpha_0}$ etc., we must determine the sign of $\triangle$. As worked out by Samuelson, we must deduce stabilizing condition for that purpose. He used the following hypothesis; the rate of change of income is proportional to the difference between intended investment-savings and actual investment-savings. Then the above equations are replased by the dynamic ones:

$$\left.\begin{aligned} \dot{Y} &= I - [Y - C(i,\ Y) - \alpha_0 - \alpha_1 Y] \\ 0 &= F(i,\ Y) - I \\ 0 &= L(i,\ Y) - M \end{aligned}\right\} \tag{22}$$

By expanding these equations in the neighborhood of the equilibrium values $(Y_0,\ i_0,\ I_0)$ where $\dot{Y}=0$, and neglecting the terms of higher orders, we get linear equations in the place of above, and the solutions of these are the form:

$$\left.\begin{aligned} Y &= Y_0 + a_1 e^{\lambda t} \\ i &= i_0 + a_2 e^{\lambda t} \\ I &= I_0 + a_3 e^{\lambda t} \end{aligned}\right\} \tag{23}$$

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[8] *Foundations*, pp. 276-283.

where λ must satisfy the following conditions:

$$\begin{vmatrix} C_i & C_Y-1+a_1-\lambda & 1 \\ F_i & F_Y & -1 \\ L_i & L_Y & 0 \end{vmatrix} = \triangle + \lambda L_i = 0 \tag{24}$$

$$\therefore \quad \lambda = -\frac{\triangle}{L_i} \tag{25}$$

For the equilibrium to be stable, λ must be negative. While $L_i<0$, $\triangle$ must be negative. This condition enables us to evaluate the derivatives and we have

$$\frac{\partial i}{\partial a_0}>0 \qquad \frac{\partial Y}{\partial a_0}>0 \tag{26}$$

Until this we followed the analysis presented by Samuelson. Next let us examine the results of proportional upward shift of consumption. Through a similar procedure we have;

$$\frac{\partial i}{\partial a_1} = \frac{-Y\cdot L_Y}{\triangle} \tag{27}$$

$$\frac{\partial Y}{\partial a_1} = \frac{Y\cdot L_i}{\triangle} \tag{28}$$

$$\frac{\partial I}{\partial a_1} = \frac{Y(L_i F_Y - F_i L_Y)}{\triangle} \tag{29}$$

Comparing these equations with (17) (18) and (19), we can conclude that if the increase of consumption is proportional to income, the coefficient of variation of i, Y or I is Y times larger than the case of an equal increase. In other words, the movement of equilibrium value is larger when the functional variation is intensified according to magnitude.

The shift of consumption function also deffects the velocity of convergency. We have

$$\frac{\partial \triangle}{\partial a_0} = 0 \qquad \therefore \quad \frac{\partial \lambda}{\partial a_0} = 0$$

$$\frac{\partial \triangle}{\partial a_1} = -L_i>0 \qquad \therefore \quad \frac{\partial \lambda}{\partial a_1} = 1$$

As λ is negative, the last equation means that the absolute value of λ decreases with the increase of a_1. Therefore we have the following conclusions:

(i) The equal upward shift of consumption has no effect on the velocity of convergency.

(ii) The income-proportional shift of consumption decreases the velocity of convergency.

Similar results are obtained when we consider the shift of investment function. We see from these results that our method enables us to evaluate not only the sign and intensity of the effect of functional variation, but also the velocity of convergency towards equilibrium.

RICARDO'S THEORY OF INTERNATIONAL BALANCE OF PAYMENTS EQUILIBRIUM[1]

By KIYOSHI KOJIMA
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I. *Introduction*

In the treatises on international trade, David Ricardo is quite famous for his illustration of Comparative Costs, but the other points in his foreign trade theory have been neglected or misunderstood. It is said that Ricardo does not indicate how the actual terms of trade can be determined between the ratios of comparative costs, which set the limits within which the terms of trade must lie, and that John Stuart Mill first supplemented the defects of Ricardo's theory by his law of Reciprocal Demands.[2] It seems to me, however, that Ricardo deserves credit for his unique theory of international balance of payments equilibrium, which may be called "cost theory" or "wage-change theory" in comparison with Mill's "demand theory" of international equilibrium. It is therefore my first task to dig out Ricardo's undiscovered theory of international balance of payments equilibrium.

We may find some confused systematization between what is called the theory of international values and the theory of transfer mechanism; though in the former Mill is said to have developed the Ricardian theory, in the latter, Ricardo and Mill are not recognized as being on the same footing, i.e., Ricardo is an antecedent of the modern theory and Mill's is the classical theory.[3] To me there should not be any difference between the two mechanisms which were developed by the same author, and it is my second purpose of this paper to find out Ricardo's uniform mechanism which may be applied to international equilibrium as well as to the transfer process. Then, Ricardo's mechanism may correctly be classified as the

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[1] I wish to thank Professors K. Akamatsu, H. Kitamura, K. Kitagawa and S. Fujii for reading my manuscript and giving me invaluable suggestions.

[2] *Cf.* J. S. Mill, *Essays on Some Unsettled Questions of Political Economy* (London, 1844), p. 5; G. Haberler, *Theory of International Trade* (London, 1936), p. 145; J. Viner, *Studies in the Theory of International Trade* (New York, 1937), p. 446.

[3] *Cf.* J. Viner, *Canada's Balance of International Indebtedness, 1900–1913* (Cambridge, 1924), pp. 191-206; C. Iversen, *Aspects of the Theory of International Capital Movements* (Copenhagen, 1936), Part II.

classical theory and Mill's as the modern theory.

In order to analyse the mechanism of international equilibrium or transfer, we must distinguish between two different adjustments: (a) adjustments in individual transactions, or, in brief, individual adjustments, and (b) adjustments in national economy as a whole or over-all adjustments. Every transaction in foreign trade is carried on by the merchant for profit under given conditions of the rate of exchange, wage levels, rates of interest, etc. As a result of individual transactions, the balance of trade, or the balance of payments, produces a specific situation, the adjustment process, if there remains any disequilibrium, being first stimulated by a change of the parameter such as exchange devaluation or wage cuts, the effect of which is not restricted to export industries or some branches of industry but to the national economy as a whole on its income earning side as well as on its income spending side. After this over-all adjustment, individual actions under the new parameter come into force, and the international equilibrium will be recovered.

The over-all adjustment is quite complicated and differs in accordance with the economic conditions of a nation and foreign countries, i.e., whether the nation and the foreign countries are progressive or declining, are operating at full employment or under-employment, and whether money wages and the monetary system are rigid or flexible, etc. The most fundamental differences among doctrines on international equilibrium and transfer mechanism may arise from how each author envisages and explains this over-all adjustment. For example, the Quantity Theory of money, which is the fundamental premise of the "specie-movements-price-change" mechanism, is a method of explaining the over-all adjustment, and the multiplier analysis of the Keynesian theory is another, each of which, though excellent, is rather too simplified and one-sided. What kind of over-all adjustment is Ricardo thinking of?

In Ricardo's *Principles* (ed. by Gonner), Chapter 7, we find those two distinct problems of individual and over-all adjustments. § 46 of Chapter 7 explains how foreign trade affects the national economy as a whole, and § 47, where the principle of comparative costs is developed, explains the effects of foreign trade on the relative value of commodities. Hence, it can be said, the latter relates to the problem of individual adjustment and the former to that of over-all adjustment. And Ricardo analyses in §§ 48–50 the mechanism of international equilibrium not under a barter system, but under a monetary one, and in §§ 51–53 the same questions as in § 47 are being analysed in monetary terms.[4] It seems important that

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[4] B. Ohlin points out the following; "It is often suggested that Ricardo left the theory there and that Mill added the equilibrium analysis through his equation of reciprocal demand. As a matter of fact, however, Ricardo (*Principles*, §§ 51-52, ed. Gonner) presented a penetrating analysis of international price relations, where this equation is really tacitly assumed to exist. There is nothing in this analysis which cannot be easily fitted into a mutual interdependence theory." *Interregional and International Trade* (Cambridge, 1933), p. 586, foot-note 1.

Ricardo has adopted a monetary system, the reason for which is that overall adjustment can only be well explained by the adoption of a monetary system, and herein we may find Ricardo's unique theory of international equilibrium.

II. *Individual Adjustments of Foreign Trade*

1. The Link Between National Value Systems.

International trade consists, of course, of transactions between nations which have a unique and different system of value (or cost-price structure) from each other. Therefore, we must, first of all, find the link of these independent value systems, which is the par value of gold or the rate of exchange and is a given condition for individual transactions. The par value of gold or the rate of exchange are, in appearance, the monetary medium connecting national value systems, and they may therefore be called the monetary link. But they play an even more fundamental role as the real link, or a link in real terms. With the premise that free competition prevails inside a country, workers of equal qualification receive equal wages and the rate of profit becomes equal, and a unit of money, or gold which has a fixed relation to money, can buy or control an equal quantity of labour. In international economy with no premise of movement of labour and capital, a unit of money or gold of a nation cannot control an equal quantity of labour of other nations but different quantities in proportion to efficiency of production. The par value of gold or the rate of exchange is a real link between national value systems in such unequal exchange ratio of labour, which is called by Professor Viner the factoral terms of trade.

We may easily find this idea in Ricardo's work. First, what is the value of gold?

> "Gold and silver, like all other commodities, are valuable only in proportion to the quantity of labour necessary to produce them, and bring them to market. Gold is about fifteen times dearer than silver, not because there is a greater demand for it, not because the supply of silver is fifteen times greater than that of gold, but solely because fifteen times the quantity of labour is necessary to procure a given quantity of it."[5]

Second, the value of gold (i.e. its labour cost of production or the cost of bringing it to market) is the intrinsic value of money. The purchasing power of money or the general price level may fluctuate temporarily according to the quantity of money, but, as Ricardo says, "The quantity of money that can be employed in a country must depend on its value"[6] (the value being the labour cost of gold which is contained in a unit of money), and "A currency is in its most perfect state when it consists wholly of paper money, but of paper money of an equal value with the gold which it professes to represent."[7] In other words, the purchasing power of money gravitates towards and coincides ultimately with the value of gold, the reason lying in "the principle of limitation of quantity (of money)"[8] and the perfect liberty of gold movement.[9] To clarify this mechanism is the very purpose of this paper.

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[5] David Ricardo, *Principles of Political Economy and Taxation*, ed. by E. C. K. Gonner (London, 1913), p. 340.

Third, the rate of exchange is ascertained "by estimating the value of the currency of one country, in the currency of another,"[10] i.e., the ratio of gold quantity which is contained in a unit of money in various countries, or the ratio of intrinsic value of money, is the rate of exchange.

And lastly, we can easily find the real exchange ratio of labour quantities between nations through the rate of exchange multiplied by the quantity of labour necessary to obtain a unit of money, and the real factoral terms of trade should be equal as to various international goods, except for the cost of transport and trade barriers, if perfect competition prevails within each trading nation.

2. Comparative Costs Including Gold—A Table of Comparative Rates of Profit Measured by Gold.

As the value of money is synonymous with the value of gold and gold is also a kind of commodity, Ricardo considers, I believe, a table of comparative costs including gold. We assume that to produce 1 gram of gold may require the labour of 100 men for one year in England and that of in 80 men Portugal. Adding this fact to Ricardo's illustration, which is based on two commodities, cloth and wine, we obtain Table 1-*a*.[11]

Table 1–*a*

	England	Portugal
Cloth	100 men	90 men
Wine	110 men	80 men
Gold	100 men	80 men

Table 1–*b*

	England	Portugal
Cloth	1.0	1.125
Wine	1.1	1.0
Gold	1.0	1.0

Table 1–*c*

	England	Portugal
Cloth	$£_1$ 45	$£_2$ 50
Wine	$£_1$ 50	$£_2$ 45
Gold	$£_1$ 45	$£_2$ 45

If we take the value of gold as yardstick, Table 1-*a* may be transformed to Table 1-*b*, which indicates the ratio of relative values in each country or the absolute prices of cloth and wine in terms of gold. Thus, if English merchants export cloth to Portugal, they may get at first 1.125 gold, i.e. 12.5 per cent extra profit in terms of gold, and Portuguese merchants, if they export wine to England, may also get 10 per cent. So we may call Table 1-*b* "comparative rates of profit," which is another expression of "comparative costs," but closer to the businessman's way of looking at things. Such a profit comparison is the actual motive of individual foreign trade transactions. The following statement of Ricardo will be well understood by what has been illustrated in Table 1-*b*.

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[6] *Ibid.*, p. 340.

[7] *Ibid.*, p. 349.

[8] *Ibid.*, p. 431.

[9] *Ibid.*, p. 345.

[10] *Ibid.*, p. 128.

[11] I have slightly modified Ricardo's famous illustration of the side of the cost of English wine from 120 men to 110 men. The insertion of gold into the table of comparative costs is similar to that of "*c*-goods" by H. v. Mangoldt in his *Grundriss der Volkswirtschaftslehre* (Stuttgart, 1863).

> "Thus, cloth cannot be imported into Portugal, unless it sell there for more gold than it costs in the country (England) from which it was imported; and wine cannot be imported into England, unless it will sell for more there than it costs in Portugal." [12]

Next, we assume that one unit of English standard money (£$_1$) contains 1/45gram of gold and Portuguese money (£$_2$) also contains 1/45 gram, consequently the rate of exchange is at par value of £$_1$1=£$_2$1. The intrinsic value of English money is $\frac{100}{45}=2.2$ men or the money wage of an English worker is £$_1$0.45, and in Portugal the former will be $\frac{80}{45}=$ 1.8 men and the latter £$_2$0.555. We call this assumption "parameter a" of money-value-money-wage.

Converting Table 1-*a* or 1-*b* by means of this "parameter a" we obtain Table 1-*c*, which illustrates Ricardo's following statement:

> Thus, suppose before the improvement in making wine in England, the price of wine here were £ 50 per pipe, and the price of a certain quantity of cloth were £ 45, whilst in Portugal the price of the same quantity of wine was £ 45, and that of the same quantity of cloth £ 50, wine would be exported from Portugal with a profit of £ 5 and cloth from England with a profit of the same amount." [13]

Ricardo's explanation of the mechanism of international equilibrium does not start from Table 1 but from Table 2, which is the new comparative cost after the improvement in making wine in England, the labour

Table 2–*a*

	England	Portugal
Cloth	100 men	90 men
Wine	100 men	80 men
Gold	100 men	80 men

Table 2–*b*

	England	Portugal
Cloth	1.0	1.125
Wine	1.0	1.0
Gold	1.0	1.0

Table 2–*c*

	England	Portugal
Cloth	£$_1$ 45	£$_2$ 50
Wine	£$_1$ 45	£$_2$ 45
Gold	£$_1$ 45	£$_2$ 45

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[12] D. Ricardo, *op. cit.*, pp. 117-118.

[13] *Ibid.*, pp. 118-119.

cost of which falling from 110 men to 100 men and its natural price from $\pounds_1$50 to $\pounds_1$45.[14] Table 2–*c* is of course made by using "parameter α." When the situation is such as Table 2–*c*, individual transactions may result in a favourable balance of trade to England, as explained by Ricardo as follows:

> "Every transaction in commerce is an independent transaction. Whilst a merchant can buy cloth in England for £45 and sell it with the usual profit in Portugal, he will continue to import it from England. His business is simply to purchase English cloth, and to pay for it by a bill of exchange, which he purchases with Portuguese money. It is to him of no importance what becomes of this money: he has discharged his debt by the remittance of the bill. His transaction is undoubtedly regulated by the terms on which he can obtain this bill, but they are known to him at the time; and the causes which may influence the market price of bills, or the rate of exchange, is no consideration of his."[15]

Here, Ricardo mentions clearly that what becomes of the rate of exchange is an over-all adjustment and consequently is of no importance to individual transactions. As a result of English an export surplus, an exchange bill on England obtains a premium, and finally the rate of exchange of the $\pounds_1$ would be forced up to the Portuguese gold export point and gold would be exported from Portugal to England.[16]

3. The Cause of Gold Movement.

Why would gold be exported from Portugal to England? To this question, Ricardo would have answered thus: its cause is none other than the profit-seeking motive of individual merchants. Owing to this motive, Portuguese merchants import only English cloth and export no wine. When the rate of exchange of the $\pounds_1$ is forced to Portuguese gold export point, it makes no difference to Portuguese merchants whether to buy exchange bills on England or exchange $\pounds_2$ for gold at a Portuguese bank and send such gold to England, and they would thus export gold to pay for imports.

In other words, gold would be exported or imported according to whether gold, like other commodities, has superior advantage or inferior advantage in the table of comparative costs. In Table 2–*a*, Portuguese gold, as well as wine, has superior advantage or its relative value is comparatively cheap, and can thus be exported. Such Ricardo's use of the terms "relative redundancy of money" or "relative cheapness of money" should be understood in this way. And there is the "cost principle" of Ricardo, which means that the division of trade, balance of trade and gold movement are at the same time determined only by the profit-seeking actions of merchants who well recognise the comparative costs.

In such a way we may understand clearly the following famous words by Ricardo in his discussion with Malthus:

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[14] *Ibid.*, p. 119.

[15] *Ibid.*, p. 119.

[16] *Ibid.*, p. 119.

> "If we consent to give coin in exchange for goods, it must be from choice, not necessity. We should not import more goods than we export, unless we had a redundancy of currency, which it therefore suits us to make a part of our exports. The exportation of the coin is caused by its cheapness, and is not the effect, but the cause of an unfavourable balance: we should not export it, if we did not send it to a better market, or if we had any commodity which we could export more profitably."[17]

In the case of tribute payment, this begins from an increased demand for exchange bills on a foreign country, and the succeeding processes of transfer are the same. And in the case of a bad harvest, the adjustment process of the balance is the same as an improvement in production, because the bad harvest brings on a rise, though contrary to the improvement, of the natural value of corn.

I shall not try here to compare too rigorously this idea of Ricardo on the cause of the gold movement with those of Thornton, Malthus and J. S. Mill, but it is clear that the latter three emphasized the importance of a change in import-demands, and have misunderstood Ricardo's way of thinking.

III. *Over-all Adjustments of National Economy*

4. The Effect of Gold Movement.

Now what resultw ill be brought about by the gold movement from Portugal to England? Though gold is exported or imported as a kind of commodity, the incoming or outgoing gold may have or was actually used as money. The over-all adjustment of the national economy on both sides to recover the balance of trade will start from the increase, in England, and the decrease, in Portugal, of the quantity of gold and money which may bring forth the following price change.

> "But the diminution of money in one country, and its increase in another, do not operate on the price of one commodity only, but on the prices of all, and therefore the price of wine and cloth will be both raised in England, and both lowered in Portugal. The price of cloth, from being £45 in one country and £50 in the other, would probably fall to £49 or £48 in Portugal, and rise to £46 or £47 in England, ..."[18]

If we assume, as nearly as possible Ricardo's illustration, that the general prices of all commodities, including gold, in England will rise by one-thirtieth and in Portugal fall in the same proportion, we may obtain Table 3. Meanwhile money wages may change in the same ratio as general prices,[19] i.e., they may rise in England from £$_1$0.45 to £$_1$0.465 and decrease in Portugal from £$_2$0.555 to £$_2$0.54. These changes in general prices and money wages mean the intrinsic (labour-cost) value of money have dropped in England from 2.2 men to $\frac{100}{46.5} = 2.15$ men and have risen in Portugal from 1.8 men to $\frac{80}{43.5} = 1.84$ men. We call these new structures of money-value-money-wage "parameter β". As long as gold movement is permitted freely, the rate of exchange will be kept at par value (£$_1$1= £$_2$1), or at least within gold points.

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[17] D. Ricardo, High Price of Bullion, in *Economic Essays*, ed. by Gonner (London, 1923), p. 11.

[18] D. Ricardo, *Principles...*, *op. cit.*, p. 120.

[19] *Cf.* "...the money price of wages will rise, but if it be in consequence of the fall in the value of money, not only wages and corn, but all other commodities will rise" (*ibid.*, p. 127).

Table 3

	England	Portugal
Cloth	£$_1$ 46.5	(£$_2$ 48.3)
Wine	(£$_1$ 46.5)	£$_2$ 43.5
Gold	(£$_1$ 46.5)	£$_2$ 43.5

From Table 3, it is clear that merchants in both countries will have an incentive to export to each other, though the trade in Table 2 is unilateral.

In these mechanisms, there occurred no change in natural value, which remains the same as in Table 2-*a*, and in relative value, which remains the same as in Table 2-*b*, but the only change is that of the natural prices in each country, as Ricardo states:

> "Foreign trade, then, whether fettered, encouraged, or free, will always continue, whatever may be the comparative difficulty of production in different countries; but it can only be regulated by altering the natural price, not the natural value, at which commodities can be produced in those countries, and that is effected by altering the distribution of the precious metals." [20]

The alteration of the natural price, not natural value, in both countries means the change of "parameter" from α to β, which equals the change in the factoral terms of trade from 2.2 English vs. 1.8 Portuguese to 2.15 vs. 1.84, i.e., it changes unfavourably to Portugal from 1 to $\frac{1}{1.07}$. This change in the factoral terms of trade is the fundamental element in the over-all mechanism of international equilibrium.

How has the change in the factoral terms of trade been occasioned? Ricardo explains it, as mentioned above, by the proportionate change in prices and money wages. This idea is of course the result of the Quantity Theory of money. This idea, is it not a true classical theory? The explanation of over-all adjustment by the Quantity Theory, however, cannot be denied to be too simple, and should better be supplemented by Professor Harrod's elaboration. "The inflow of gold makes the situation of capitalists on balance more liquid. That same increase of liquidity which drives them to seek more profitable channels of investment may also stimulate investment at home, by making the conditions of borrowing more easy."[21] Increased investment will set up keener competition for the means of production, especially for labour, the result of which raises industrial costs and so reduces exports.[22] It is important to understand that, in the meantime, until the gold inflow reaches the rise of prices, there happen many real changes both on production and on income spending side, and at least there arises the increase in investment, the volume of employment or money wages prior to the rise of prices.

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[20] *Ibid.*, p. 330.

By the way, Ricardo considers not only the short-run process of adjustment by the Quantity Theory as mentioned and interpreted above in the light of Professor Harrod, but also the dynamic or long-run effect of foreign trade. We may recognize the inflow of gold by the improvement in some industry as the increase of capital accumulation,[23] which may, in accordance with the Wage Fund theory, raise the market rate of wages. This would, in accordance with Malthusian doctrine, produce a population increase. By the law of diminishing returns, the corn price will rise and the natural rate of wages will coincide with the market rate. Consequently, the real profit per unit of capital would fall. Foreign trade, through the importation of cheap corn, is a remedy, as it prevents the rate of profit and capital accumulation from falling.

Ricardo distinguishes rigorously two lines of changes: one is the short-run or static change which is the change of natural price, and the other is the long-run or dynamic change which is the change of natural value. How these two changes are interrelated is a problem. However, even in the short-run adjustment, as Professor Harrod recognizes, we must also see clearly the wage change through the increase or decrease in investment,[24] which is not clearly explained by the Ricardian Quantity Theory approach.

5. Adjustment by the "Competition of Commerce."

Subsequent to, or simultaneously with, the change of natural prices, there occurs another over-all adjustment, the change of relative (natural) values of commodities through importation. This adjustment is made by the internal competition between industries, which Ricardo called "the competition of commerce."[25]

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[21] R. F. Harrod, *International Economics*, revised ed. (London 1939), p. 140.

[22] *Ditto.*

[23] Ricardo mentions that the improvement in production of English wine is "a real advantage" (Ricardo, *op. cit.*, p. 118) to England distinguishing it from "a seeming advantage" (p. 122) to Portugal, because, "Estimated in money, the whole revenue of Portugal would be diminished; estimated in the same medium, the whole revenue of England would be increased" (p. 122).

[24] The difference of the conclusion between Ricardo and Professor Harrod comes from their premises on employment. In Ricardo a condition of full employment being assumed, the increase of investment will result in a rise of wages, but in Professor Harrod a condition of under-employment being assumed, it will produce an only increase of employment.

As the prices in Table 1–*c*, 2–*c* and 3 should be seen as "natural prices," the difference in prices of the same commodities of the two countries is the extra profit which exporters or importers might obtain. So long as this extra profit may be obtained by foreign trade, "capital would naturally flow into this advantageous trade,"[26] and the increase in capital and competition in this trade would reduce its rate of profit to the general rate. This means that the price of an imported commodity would eventually fall to the natural price of the exporting country. Ricardo continues in the above-quoted paragraph, "till the fall of the price of wine (imported commodity to England) had brought everything to the former level"[27] ("everything" pointing to the rate of profit). More clearly Ricardo mentions the change in price of imported commodities as follows.

> "Corn, like every other commodity, has in every country its natural price, viz., that price which is necessary to its production, and without which it could not be cultivated: it is this price which governs its market price, and which determines the expediency of exporting it to foreign countries. If the importation of corn were prohibited in England, its natural price might rise to £6 per quarter in England, whilst it was only at half that price in France. If at this time, the prohibition of importation were removed, corn would fall in the English market, not to a price between £6 and £3, but ultimately and permanently to the natural price of France, the price at which it could be furnished to the English market, and afford the usual and ordinary profits of stock in France; and it would remain at this price, whether England consumed a hundred thousand, or a million of quarters. If the demand of England were for the latter quantity, it is probable that, owing to the necessity under which France would be, of having recourse to land of a worse quality, to furnish this large supply, the natural price would rise in France; and this would of course affect also the price of corn in England. *All that I contend for is, that it is the natural price of commodities in the exporting country, which ultimately regulates the prices at which they shall be sold, if they are not the objects of monopoly, in the importing country.*"[28]

In these remarks we can see Ricardo's thoroughgoing idea: (1) the price of commodities is ultimately governed by the natural price or cost of production, (2) the demand is a given condition and affects only the quantity and the cost at which the commodity be produced, (3) what determines the expediency of exporting or importing certain commodities is the comparative costs of production, and (4) the price of imported commodities may ultimately fall to the natural price of the exporting country.

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[25] Ricardo, *op. cit.*, p. 117.

[26] *Ibid.*, p. 109.

[27] *Ibid.*, p. 109.

[28] *Ibid.*, pp. 363-4. The italics are mine.

A price reduction might happen not only to English wine and Portuguese cloth but also to gold of England. If so, we obtain Table 4–*c*, and the rate of exchange may recover its par value. Table 4–*c* is equivalent to Table 4–*b*, the ratio of relative values in each country which becomes the common ratio, and there remains no extra profit in foreign trade compared with home industries. This is a condition, necessary but insufficient, of international equilibrium. The other condition is that, during the period of the two adjustments mentioned above, the value exported and imported in terms of gold must be equal, and if the balance of trade is not yet be recovered, the same adjustment processes are repeated.[29] In short, a common ratio of relative values in both countries by which the balance of trade

Table 4–*a*

	England	Portugal
Cloth	100 men	86 men
Wine	93 men	80 men
Gold	93 men	80 men

Table 4–*b*

	England	Portugal
Cloth	1.07	1.07
Wine	1	1
Gold	1	1

Table 4–*c*

	England	Portugal
Cloth	£$_1$ 46.5	(£$_2$ 46.5)
Wine	(£$_1$ 43.5)	£$_2$ 43.5
Gold	(£$_1$ 43.5)	£$_2$ 43.5

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[29] We have simplified the process of change from Table 2-*c* to Table 3 and to Table 4-*c*, but the actual adjustment may be step-by-step changes as follows.

In Table 2-*c*, Portugal has an import-surplus, and the rate of exchange will be favourable to England, for example 1%, to the Portuguese gold export point, then we may obtain Table 5-*a*. This difference of the gold price in both countries will stimulate gold exports from Portugal to England. When gold moved, as explained in Section 4, the general price may change on the one hand, and on the other, as explained in Section 5, prices of imported commodities (now gold) may fall, and the situation is like that of Table 5-*b*.

Table 5-*a*

	England	Portugal
Cloth	£$_1$ 45	£$_2$ 50
Wine	£$_1$ 45	£$_2$ 45
Gold	£$_1$ 45.45	£$_2$ 45

Table 5-*b*

	England	Portugal
Cloth	£$_1$45.45	£$_2$ 49.5
Wine	£$_1$45.45	£$_2$ 44.55
Gold	(£$_1$44.55)	£$_2$ 44.55

Table 5-*c*

	England	Portugal
Cloth	£$_1$45.45	(£$_2$45.45)
Wine	(£$_1$44.55)	£$_2$44.55
Gold	(£$_1$44.55)	£$_2$44.55

Now, not only cloth may be exported from England to Portugal but also wine can be exported from Portugal to England and the prices of imported commodities on each country may fall as in Table 5-*c*. Such is the first change which has occurred by the movement of some small quantity of gold, but, if the quantity is not sufficient to cover the balance of trade, another step of similar change may occur recurrently. Ricardo says "...the exchange can only be at par, when a sufficient quantity of money is introduced into the country excelling in manufactures, so as to raise the price of its corn and labour" (*op. cit.*, p. 127).

In such a way, not as in Table 3, neither the prices of English wine and gold rise to £$_1$ 46.5 nor the price of Portuguese cloth fall to £$_2$ 48.3 (these price changes being supposed or used only to explain the over-all adjustment as separated from the individual adjustment), but ultimately may reach the situation expressed by Table 4-*c*.

can be attained is a necessary and sufficient condition of international equilibrium.

Converting Table 4–*c* or 4–*b* by means of "parameter β" we obtain Table 4–*a*. Here, not only the relative values of cloth, wine and gold in each country are the same, but also the factoral terms of trade between countries reach to English 100 vs. Portuguese 86 ($\fallingdotseq 93:80$) for every commodity.[30] It is a clear expression of the difference in national productivity, "real rewards of the labourer"[31] or "the comparative value of money in different countries of the world."[32]

In short, the international equilibrium and the commodity terms of trade, according to Ricardo, depend on the quantity of export goods in both countries which are produced and supplied to the foreign countries by the re-investment of capital to the export industry from other industries until the extra profit vanishes, viz. until the comparative costs attain a common ratio of costs. We cannot deny that the change in demand side plays an important role in this process, but, in Ricardo, it affects only the scale and cost of production. And, if production is expanded by increasing costs, the expansion will also be an accelerating, but individual process of adjustment which leads to a common ratio of costs.[33] This kind of process might naturally be included in Ricardo's conception of "the competition of commerce." Consequently, we may rightly consider Ricardo's mechanism of international equilibrium as "cost theory" or "wage-change theory," and, at the same time, it can safely be classified as the classical theory, because it necessarilly includes the unfavourable change in terms of trade (commodity and factoral) for the import surplus recovering or capital exporting country. Comparing Ricardo's theory, Mill's Law of Equation of Reciprocal (or International) Demands constitutes a problem. If the law means that exports and imports must balance, it is merely a truism. And if the law contends that equation must be established only by the change of import demand in both countries through the price-effect or the

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[30] In the case of exchange devaluation or appreciation, i.e.; "whenever the current of money is forcibly stopped, and when money is prevented from settling at its just level" (pp. 127–128), the result makes no difference. The rate of exchange would go from par to $£_1 1 = £_2 1.07$, which is equal to an unfavourable change for Portugal in factoral terms of trade. The prices of cloth and wine would be the same, as in Table 6, in both countries, converted by the new rate of exchange. The real price of gold, however, differs in both countries because the gold movement is forcibly stopped. If we convert Table 6 by means of "parameter α," we obtain Table 4–*a*, but excluding gold.

Table 6

	England	Portugal
Cloth	$£_1$ 45	$£_2$ 48.2
Wine	$£_1$ 42.1	$£_2$ 45
Gold	$£_1$ 45	$£_2$ 45

[31] *Ibid.*, p. 123.

[32] *Ibid.*, p. 126.

[33] *Cf.* Professor Harrod's elucidation of international equilibrium in the first half of his *International Economics*.

income-effect, his mechanism is clearly different from Ricardo's. We therefore recognize Mill's mechanism as "demand theory," the details of which, however, may be studied on another occasion.

IV. *A Diagrammatical Representation*

Ricardo's mechanism of international equilibrium explained above may well be represented by a diagram. In Figure 1, on the lower horizontal axis is indicated the number of Portuguese labour and on the left hand vertical axis is the number of English labour. The distance of OW or OC is the cost of wine and cloth in Portugal and the distance of Ow or Oc their cost in England, in terms of respective labour. The lines Ot_1, Ot_2, . . . represent the factoral terms of trade or the international ratio of efficiency reward in terms of gold. We thus obtain points •, ○, △ and × where the Ot line intersects the lines WW', CC', ww' and cc'. These points indicate the prices in terms of gold of Portuguese wine, Portuguese cloth, English wine and English cloth, respectively, the horizontal distances from the left hand vertical axis to these points being the prices for Portugal and the vertical distances from the lower horizontal axis the prices for England.

(1) If the factoral terms of trade are Ot_1, the gold prices of English wine and cloth would be lower than the Portuguese for England as well as for Portugal. Both commodities will then be exported from England to Portugal (i.e., complete unilateral trade), and gold will be exported in the reverse direction. Consequently, the factoral terms of trade will change to Ot_2. (2) Under the factoral terms of trade Ot_2, the gold price of English cloth is lower than Portuguese cloth for both countries, so it will be exported from England to Portugal, but the gold price of English wine is equal to Portuguese wine, as at the point a; so it may not be traded (i.e., unilateral trade), and gold will be exported from Portugal to England (this situation is illustrated by Table 2). Consequently, the factoral terms of trade will change to Ot_3. (3) If the factoral terms of trade become Ot_3, the gold price of wine is lower in Portugal (point e in Figure 1) than in England (point g), and that of cloth is lower in England (point d) than in Portugal (point f), so bilateral export may occur (as illustrated in Table 3). The distances, vertically for England and horizontally for Portugal, of e and g, or d and f, are the extra profit in foreign trade in terms of gold. The gold price of English wine and Portuguese cloth will fall to the gold prices in the exporting country (to points e and d) respectively, through importation, the international price of each commodity may become equal in terms of gold, and the extra profit may vanish. This equilibrium may be attained through "competition in commerce," as explained with refer-

ence to Table 4.

When the process begins from the factoral terms of trade Ot_5, the explanation is the same as mentioned above, and the equilibrium will also be set up as under Ot_3. The limits, within which factoral terms of trade lie, are of course Ot_2 and Ot_4. Such a condition of Ot_1 or Ot_5 is not unthinkable, especially under what is called "the fundamental disequilibrium" in the post-war period.[34]

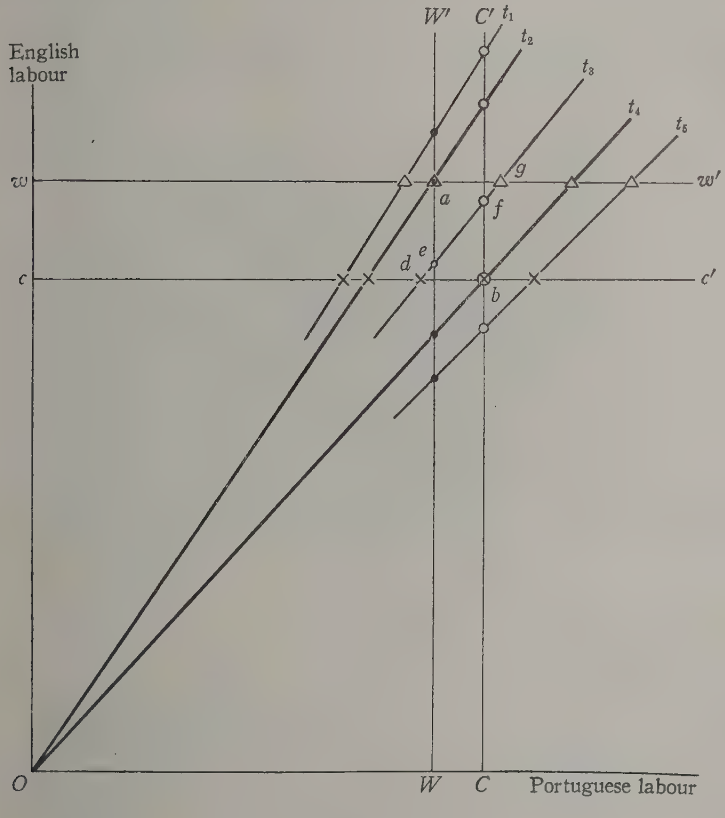

Fig. 1

This diagrammatical illustration can be carried out in another way. In Figure 2, on the lower horizontal axis is indicated the price of cloth in terms of gold and the left hand vertical axis is the price of wine in terms of gold. The line *OE* represents the relative values of wine and cloth in England and the line *OP* those in Portugal, both lines representing comparative costs. The relation between e_1, e_2, e_3, . . ., on the line *OE*, and p_1, p_2, p_3, . . ., on the line *OP*, represents the factoral terms of trade or the international ratio of efficiency reward in terms of gold. Thus, (1) if the factoral terms of trade are $e_1 : p_1$, the gold prices of English cloth (Oc_1 in Figure 2) and English wine (Ow_1) are lower than the Portuguese prices (Oc_1' and Ow_1', respectively). Consequently, the factoral terms of trade will change to $e_2 : p_2$ through the rise of the gold price and of wages in England and a fall in Portugal, the process and causality of which are the same as mentioned above. (2) Under the factoral terms of trade $e_2 : p_2$, the gold price of English cloth (Oc_2) is lower than that of Portuguese cloth (Oc_2'), but the gold price of wine is equal in both countries (Ow_2=Ow_2'). (3) If the factoral terms of trade become $e_3 : p_3$, the gold price of wine will be lower in Portugal (Ow_3') than in England (Ow_3), and that of cloth the opposite (i.e., Oc_3 is lower than Oc_3'). International equilibrium may be set up under the commodity terms of trade *OQ*, if exports in both countries

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[34] Ricardo points out: "Of these two countries, if one had the advantage in the manufacture of goods of one quality, and the other in the manufacture of goods of another quality, there would be no decided influx of the precious metals into either; but if the advantage very heavily preponderated in favour of either, that effect would be inevitable" (*op. cit.*, p. 123).

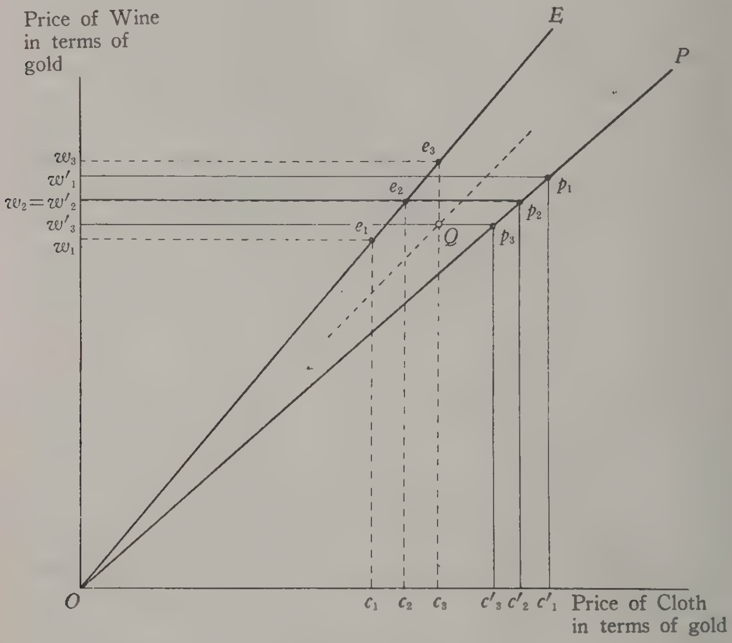

Fig. 2

are equalized, when an extra profit in foreign trade, i.e., the distance e_3Q and p_3O, have vanished through internal competition. At equilibrium the prices of English wine and Portuguese cloth will fall to the prices of respective export country, i.e., the former may fall from Ow_3 to Ow_3' and the latter from Oc_3' to Oc_3.

The two methods of diagrammatical representation are of course on the same footing, but the first method is applicable to the multi-commodities (but of two countries), and the second to the multi-countries (but trading in two commodities).

The core of these two methods is that (a) the change of the factoral terms of trade is the fundamental element in the mechanism of international equilibrium and narrows the limits within which the equilibrium and the commodity terms of trade will be determined, and (b) inter-industrial competition within each country will determine the actual equilibrium and the commodity terms of trade. As Ricardo's analysis and our figures represent only the international equilibrium of the cost-price sturcture,[35] we must add another figure which explains the variation in the amount of export-supply or of import-demand. The latter may be drawn after the critical reconsideration on the Mill-Marshallian analysis has been completed. But a word of caution is perhaps in order at this point that the Mill-Marshallian analysis, especially the analysis which uses the reciprocal demand curves, forgets so often the importance of international equilibrium of the cost-price structure.

V. *Conclusion*

This paper has tried to trace Ricardo's well-known proposition:

> "Gold and silver having been chosen for the general medium of circulation, they are, by the competition of commerce, distributed in such proportions amongst the different countries of the world, as to accommodate themselves to the natural traffic which would take place if no such metals existed, and the trade between countries were purely a trade of barter."[36]

To the "natural traffic" or to "trade of barter," we can only reach through the mechanism of international equilibrium examined above.

The mechanism is, in brief, as follows:

(1) Individual profit-seeking transactions of foreign trade are carried out on the basis of comparative costs, and these individual calculations determine the international division of labour, the lines of foreign trade, the fluctu-

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[35] The diagrammatical representation of Mangoldt's treatise is also said to be representing only the international relation of the cost-price structure. See, J. Viner, *Studies . . .*, *op. cit.*, p. 459, Chart VIII, and p. 465, Chart IX.

[36] Ricardo, *op. cit.*, p. 117.

ation of exchange rates and the movement of gold.

(2) The over-all adjustment of the link, monetary and real, between the different value-systems may occur through a change of wages and prices as a result of gold movements or through variations of exchange rates.

(3) Through inter-industrial competition, the rate of profit may become equal within the national economy, and, consequently, commodities are exported and imported at the natural price of the exporting country, which price is of course cheaper for the importing country than before opening the trade.

It is evident that Ricardo's characteristics lie in his thoroughgoing "real-cost principle" or the "competition of commerce principle."

The immediate or static gain from foreign trade is not to "increase the amount of value," because foreign trade does not directly affect the amount of capital and labour of a nation but merely introduces a better redistribution of them, but to "increase the mass of commodities, and therefore the sum of enjoyment,"[37] in other words, the fall of relative prices in the imported commodities (as well as gold, if imported). As regards the indirect or dynamic effects of foreign trade, there remain many problems. Ricardo himself says: (1) cheapening of the commodities through importation diminishes expenditure and consequently affords insentives to saving and to the accumulation of capital, (2) "by the extension of foreign trade, or by improvements in machinery, the food and necessaries of the labourer can be brought to market, at a reduced price, profits will rise,"[38] and (3) foreign trade will change the distribution of national income.[39]

We have limited our analysis to the mechanism of international equilibrium, but we have to reconsider Ricardo's view on the gain, especially the dynamic gain, from foreign trade with reference to this paper.

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[37] *Ibid.*, p. 108.

[38] *Ibid.*, p. 112.

[39] *Ibid.*, p. 256.

ARISTOTLE'S THEORY OF PRACTICAL WISDOM

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Aristotelian philosophy has been studied assiduously by scholars of the world for the last two thousand years. It seems that no Aristotelian stone has been left unturned and that nothing new can be said about the Stagirite in the sphere of philosophy and philology. But one can always expect to find a new angle, from which to study his outstanding works on philosophical problems. In any new undertaking, however, we should not follow the Scholastic formulae or the well-beaten path of Aristotelian study. What we are called upon to do today is to throw a new light on the incarnate system of Aristotelian philosophy evolved through following its development rather than on his pre-harmonized system.

This problem has been successfully dealt with by Prof. Werner Jaeger in his work, *Aristoteles, Grundlegung einer Geschichte seiner Entwicklung* (Berlin, 1923). A. E. Taylor was quite right when he said, "If any of us henceforth ventures to make assertions about Aristotle without having taken Mr. Jaeger's fascinating work into account, he will at least be speaking very terribly at his own peril."[1] That development of Aristotelian philosophy seen in the studies effected on the Jaeger method has been followed and furthered largely by F. Solmsen and R. Walzer in both logical and ethical fields.[2] I myself have traced by this same method the history of Aristotle's metaphysical and epistemological developments in my work, *Aristotelian Studies* (in Japanese, Tokyo, 1940). Again in another treatise, *The Ethics of Aristotle* (in Japanese, Tokyo, 1951), I have endeavoured to survey and analyse the development and structure of the practical wisdom (φρόνησις) of Aristotle which constitutes the most fundamental concept of all the intellectual virtues. This is an attempt to make an inquiry into the scientific character of his classical *Ethics*. In this article, I will give a short summary of the main conclusion I have reached in my recent work, dwelling on the relationship between practical wisdom and practical syllogism which to my way of thinking presents a very interesting problem in the study of Aristotle.

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[1] *Cf.* A. E. Taylor's critical notice on Jaeger's work, in "*Mind*", Vol. XXXIII, 1924, p. 193.

[2] F. Solmsen, *Die Entwicklung der Aristotelischen Logik und Rhetorik*, Neue Philologische Untersuchungen, hrsg. v. W. Jaeger, Heft 4 (Berlin, 1929); R. Walzer, *Magna Moralia und Aristotelische Ethik*, Neue Philol. Unters. Heft 7 (Berlih, 1929).

I

At first, I attempt to make clear two things; namely, the relationships enveloping the three works of ethics credited to Aristotle, the *Nicomachean Ethics*, the *Eudemian Ethics* and the *Great Ethics* and my point of view on each of them. Sir A. Grant, in his well-done study, *The Ethics of Aristotle* (3 ed., London, 1874), observes: "First, the *Nicomachean Ethics* are, as a whole, the genuine and original work of Aristotle himself, though some special parts of them are open to doubt. Second, the *Eudemian Ethics* are the work of Eudemus, the pupil of Aristotle, written either during his master's lifetime or shortly after his death: they are based entirely on the *Nicomachean Ethics*, being a re-writing of the system contained in the former treatise with some modifications and additions. Third, the *Great Ethics* are the compilation of some considerably later Peripatetic, who had before him the Ethics both of Aristotle and of Eudemus, and who gives a sort of abstract of the results of both, but on the whole follows Eudemus more closely than Aristotle."[3]

This explanation seems coherent and well-substantiated. For students of Aristotle have regarded the *Nicomachean Ethics* as most fundamental in ideas and most original in style and tone. St. Thomas and many other commentators have done an extensive and intensive research work on the *Nicomachean Ethics* and given a scant attention to the *Eudemian* and the *Great Ethics*. The only exception to this interpretation is F. Schleiermacher, who in his *Über die ethischen Werke des Aristoteles* read at the Berlin Academy in 1817, asserted that Aristotle wrote the *Great Ethics* rather than the two other works which probably were brought out by some other philosophers on the basis of the Stagirite's book. He even went so far as to say that the *Nicomachean Ethics* was written later than the two others. But he arrived at such an arbitrary conclusion, as can be seen from his Plato-interpretation, chiefly because he had been engrossed in his attempt to build up a philosophical system which hindered him in a more natural developmental interpretation of the *Ethics*. Accordingly, the real *intentio Aristotelis* was lost in the process of his study. L. Spengel strongly refutes the theory of F. Schleiermacher in his *Über die unter Namen des Aristoteles erhaltenen ethischen Schriften* (1841) after a comparative study of the three *Ethics*. According to him, only the *Nicomachean Ethics* is Aristotle's genuine work, the *Eudemian Ethics* is copy of it and the *Great Ethics* is a product of the *Eudemian*. In this respect, Spengel essentially concurs with Grant. It may be said therefore that the interpretations of Spengel and Grant are regarded as the conclusion of the study in the Aristotelian Ethics in the 19th century.

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[3] A. Grant, *The Ethics of Aristotle*, Vol. I (London, 1874), p. 18.

Jaeger and other scholars, on the other hand, proved that the *Nicomachean* was Aristotle's genuine work of great importance, but that the *Great Ethics* was written by a Peripatetic who probably had been influenced by Dicaearchus and that the latter work was compiled with those extracts made from two other *Ethics* and used as text books for lectures. The *Great Ethics*, in spite of its name, is less valuable and bulky. H. v. Arnim has presented proof refuting this theory in a way that resembles Schleiermacher's point of view, but we cannot but feel that Jaeger's interpretation is more appropriate and substantial. Walzer in his exhaustive and persuasive work, *Magna Moralia und Aristotelische Ethik* (Berlin, 1929) agrees with Jaeger, thereby probably ending the controversy between Jaeger and Arnim. But what is important to us here is rather the position of the *Eudemian Ethics* in the philosophical development of Aristotle and its relation with the *Nicomachean Ethics*.

It is explicitly clear that the *Eudemian Ethics* basically agrees with the *Nicomachean Ethics*, although the former discourses in a different way and in a condensed form; it is more theological and Platonic than the latter. Since it is unthinkable that the author of the *Nicomachean Ethics* who was a more mature and deeper thinker than the author of the *Eudemian Ethics* would attempt to produce a crude and imperfect excerpt of his own original work, namely, the *Eudemian Ethics*, there is every reason to believe that Eudemus not only edited but wrote the latter himself as well.

But this interpretation is right only when it is assumed that Aristotle held only one ethical point of view embodied in the *Nicomachean Ethics*. For this very reason, any system of thought that disagrees with the *Nicomachean Ethics* is considered un-Aristotelian and Eudemian. There can be no shadow of doubt that Aristotle's *Ethics* is Aristotelian. But this assertion too can be misleading, for as Kant could not build up his so-called critical philosophy at one bound, so Aristotle might not have been able to perfect his ethical system at a stroke. If we can suppose that in his earlier days, his metaphysical thinking followed a theological and Platonic pattern, can we not say the same thing about his ethical thought too? If this assumption is not un-Aristotelian, we see a new light in the interpretation of the *Eudemian Ethics*. In other words, this assumption concerning Aristotle's earlier and more Platonic work, the original *Metaphysics*, holds true with his original *Ethics*. Hence, this *Ethics* can be ascribed to the *Eudemian Ethics*.

The *Fundamentals of the History of Aristotle's Development* has resulted from Aristotelian studies carried on this light. The study began with P. v. d. Mühll, and was developed on the basis of his work by E. Kapp who carefully scrutinized *the Relation of the Eudemian Ethics to the Nicomachean*

Ethics.[4] This problem has been, as mentioned above, successfully solved by Jaeger. He writes about it as follows:

"My own results, which partly agree with and partly go beyond those of my two predecessors, were reached along another path and without knowledge of their observations. Since their view, that the *Eudemian Ethics* is early and genuine, does not seem to have gained general acceptance, and since I hope to be able to make the matter clear once and for all, I will set out my own method here. It was a disadvantage of their work that it was not related to Aristotle's development as a whole. In particular, by confining their comparisons to the two great *Ethics*, they gave a handle for many objections, since they had no fixed point of temporal reference. Such an immovable criterion is to be found in Aristotle's ethics, which has never yet been seriously considered. By means of the fragments of the *Protrepticus*, including the newly recovered matter, it is possible to make a picture of the development of his ethics in three clearly separated stages: the late Platonic of the *Protrepticus*, the reformed Platonism of the *Eudemian*, and the late Aristotelianism of the *Nicomachean*. For us the most important form of the inquiry will be the question which of the two *Ethics* is to be regarded as the immediate product of the problems of the *Protrepticus*, and whether it is possible to demonstrate a continuous advance at all."[5]

Having thus gained a true orientation of the disputed problem and accomplished a thorough investigation, Jaeger expressed his conviction that he has arrived at a satisfactory conculsion. As for us, we can, following this trustworthy assumption, clarify the very interesting development of the meaning of practical wisdom (*φρόνησις*) which is a most fundamental concept in the practical philosophy of Aristotle.

II

Aristotle's mission, *σώζειν τὰ φαινόμενα* (to salve the phenomena) has, in my opinion, a double meaning, namely, to raise the commonplace to the scientific and to lower the transcendental to the empirical. To the Stagirite, the phenomenal does not contradict the noumenal or the immanent, the transcendent; rather they harmonize with each other, the transcendental being able to claim its existence only within the phenomenal. That is why he is sometimes associated with *the hither side of Idealism and Realism* or *the middle-of-the-road between Rationalism and Empirism.* This mode of thinking ascribed to Aristotle holds true also with the origins of almost all the *terminus technicus* that he introduced into the philosophical world. It may be said, for instance, that the concept of the *mean* (μεσότης) which is fundamental to ethical virtue is a combination of two items: first, the worldly wisdom that lies within the Hellenic national spirit from the time of the Seven Sages or the ordinary way of thinking of the so-called *aurea mediocritas* which finds expression in such gnomes as "Excess is to be avoided" (μηδὲν ἄγαν) or "Moderation is the best" (μέτρον ἄριστον); second, the exact scientific ethics of the *norm* (μέτρον) which runs through almost all the dialogues of Plato and especially the *Philebus*. Through such understanding, we can comprehend Aristotle's famous definition of the *mean:* "in respect of its substance and the definition which states its essence virtue is a mean, with regard to what is best and right an extreme."[6] As regards the term *phronesis* (prudentia, practical wisdom), we may say that it is still more clearly marked by the same tendency; here too it shows two sides, scientific and commonplace.

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[4] P. v. d. Mühll, *De Aristotelis Ethicorum Eudemiorum Auctoritate* (Göttingen, 1909); E. Kapp, *Das Verhalthis der Eudemischen zur Nikomachischen Ethik* (Berlin, 1912).

[5] W. Jaeger, *Aristoteles.* p. 241 (I have borrowed this quotation from the English translation by R. Robinson. ed. 2, Oxford, 1948), p. 231.

Phronesis was first used as a philosophical term in the days of Socrates. Needless to say, this term has been in use since the intellectual dawning of Hellas and even is to be found, for example, in the gnomes of the Seven Sages.[7] But in those days *phronesis* meant worldly wisdom in actual life almost approximating *empeiria*. For Heraclitus says in one of his fragments: "*Logos* is common to all, but many people live as if they had a special *phronesis* of their own,"[8] thereby bearing out the contention that there was virtually no distinction between *phronesis* and *episteme* or *gnosis*. Empedocles and Democritus often used this term in the sense of *aesthesis*.[9] We can therefore say that *phronesis* represents in pre-Socratic philosophy an idea that embodies all that is human without a technical meaning of its own. But to Socrates, all virtues were nothing but *phronesis*, *logos* and *episteme;* out of this practical intellectualism grew "Knowledge is virtue" and "None do evil willingly, for those who know virtue, do it and only those who do not do vice." Plato, his great disciple, used *phronesis* in the sense of *sophia* and *episteme* after the Socratic fashion, meaning both practical reason and theoretical reason. The *loci classici* of this typical use are shown in the *Meno*, the *Phaedo and the Symposium.*[10] This practical intellectualism, furthermore, is the keynote of the *Respublica*. As unquestionable proof of our interpretation stands the ultimate principle, *Idea of*

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[6] *Eth. Nic.*, II 6, 1107a 6—8 (For ease of reference, I have used the standard Oxford translation ed. by W. D. Ross, with some alterations.).

[7] Diels-Kranz, *Die Fragmente der Vorsokratiker*, 5. Aufl. Bd. I (Berlin, 1934). 10 (1, 64, 18, 65, 6).

[8] *Ibid.*, Herakleitos B 2.

[9] *Ibid.*, Empedokles A 86. Demokritos A 112.

[10] *Meno* 88 A—D, *Phaedo* 79 D, *Symposium* 206 A, *Respublica* 496 A. *Cf.* J. Hirschberger, *Die phronesis in der Philosophie Platos vor dem Steate*, Philologus, Supplement band, XXV (Leipzig, 1933).

Good; it governs and evaluates not only all existence and cognition but all human conduct as well. All the subsequently-produced dialogues, especially the *Philebus*, which takes up the problem of *phronesis* as one of its main subjects, are not exceptions to this interpretation. What is to be noted here, however, is the fact that Plato therein is quite conscious of the *aporia* embodied in the transcendency of that Idea, indicating a compromising inclination toward reality. For, in reply to the question, "What is virtue?" Philebus gives *hedone* and Socrates answers *phronesis* that belongs to the same order of ethical merit as *nous*. These facts form the indispensable premise to the understanding of Aristotle's ethical development.

We firmly believe that Aristotle was a most true descendant of Plato; neither was he a born anti-Platonist nor his humble adherent. Aristotle belived that he could not understand Plato thoroughly unless he surpassed his teacher. Paradoxical as it may sound, it is Aristotle's stringent criticism on his teacher's works that has distinguished him as the protagonist of true and ever-lasting Platonism. In the *Protrepticus* written when Aristotle was a member of the Academy, *phronesis* is spoken in Platonic style as well as in Platonic spirit. It links the *Protrepticus* immediately to the *Philebus*. For here it seeks to make *ethico more geometrico* and defines philosophy as the most exact science, strictly following the Platonic formulae of *φρόνησις = ἐπιστήμη = νοῦς = σοφία*. In other words, *phronesis* in those days meant reason, both theoretical and practical, as it did at the time of Socrates and Plato. Aristotle wrote the *Eudemian Ethics* in his days of travelling; it is original to the *Nicomachean Ethics* which he wrote when he was the head of Lyceum after he had reached maturity. The *Eudemian Ethics* is reflective and critical on Platonism although the author firmly believed in the latter. It is a product in a period of trasition. (The three works critical of Platonism, namely, *On Ideas*, *On Philosophy* and *the earliest Metaphysics*, are believed to have been written about this time.) Although this original *Ethics* is as a whole deeply colored in the same transcendental ethos as the *Protrepticus* and presents *vita contemplativa* as ideal life, it does not refute the fact that virtue in everyday life must be humanistic and non-transcendent. Here the Metaphysics of morals is found compatible with the Ethics of humanistic good. We can therefore easily understand why *phronesis* have a dual character of the transcendental and the empirical, embodying theonomic and imperative reason, on the one hand, and practical prudence, on the other. But nothing is said here of the nature of *phronesis* as a moral *habitus*. The *Nicomachean Ethics* however gives this explanation.

We can characterize this classical *Ethics* as *ethica more empirico*, for it analyses and describes the phenomena of human virtues not by a transcendental but an empirical method. This Ethics may also be called a *Phenomenology of Ethical Consciousness*. Many a shade of meaning of *phronesis* used in this *Ethics* are analysed by L. H. G. Greenwood as follows:

"The word *phronesis* is used in VI (of the *Nicomachean Ethics*) in four senses. The four senses are as follows: (a) In the narrowest of the four *phronesis* is merely said to lead to the knowledge by each man of what is good for himself as distinguished from other people. (b) *Phronesis* as distinguished from εὐβουλία is the ἀρετή that leads to the comprehending and retaining of practical truth as distinguished from the searching for it and finding it. (c) *Phronesis* as distinguished from τέχνη is the ἀρετή that leads to truth about πρακτά as distinguished from ποιητά (d) In the broadest of the four senses *phronesis* is the ἀρετή that leads to truth about all human action whether πρᾶξις or ποίησις".[11]

But at another place, Greenwood gives another division from a different point of view. "The second division has to do with the sphere of action rather than with the kind of action; that namely into, πολιτική, οἰκονομία, φρόνησις περὶ αὑτόν καὶ ἕνα — practical intellectual ἀρετή as it concerns the whole country, a single household, the individual thinker himself." But "the third division is more obscure than the second, and it is in a sense, at least for the purpose of the Ethics, more important. It is founded on differences of intellectual activity itself rather than on differences in the nature or sphere of the actions to which the activity leads. The third division includes the head εὐβουλία, εὐστοχία, ἀγχίνοια, σύνεσις, γνώμη, νοῦς πρακτικός: with a suggestion of *phronesis* in a narrow sense as opposed to all of these."[12]

This analysis is very comprehensive and suggestive, but the mutual relationship between the three divisions is rather obscure; it seems to have completely ignored the historical development of *phronesis*. I would interpret the essential nature of *phronesis* in the *Nicomachean Ethics* as follows: According to Aristotle's definition, "*phronesis* is a time and reasoned state of capacity to act with regard to the things that are good or bad for man."[13] And since no one deliberates on or calculates things that are invariable or things that are beyond his reach, *phronesis* is the calculative virtue of variable things. It may be therefore contrasted with *sophia* which is a scientific virtue of invariable things. As quoted before, *phronesis* is divided into political, economic and individual wisdoms according to differences in the sphere of action. But what is more important to our present study is to make intelligible the relations between this *habitus* and its attributes which are roughly grouped into εὐβουλία, σύνεσις and γνώμη.

Aristotle says, "It is thought to be the mark of a man of practical wisdom (φρόνιμος) to be able to deliberate well (καλῶς) about what good and expedient for himself, not in the same particular respect, but about what sort of things conduce to the good life in general."[14] Since "*excellently*" (εὖ) and "*well*" (καλῶς) have the same meaning, it is quite natural that *excellence in deliberation* (εὐβουλία) should be considered to be an essential attribute of *phronimos*, excellence in deliberation will be a correctness with regard to what conduces to the end, of which *phronesis* is a true apprehension. Then what will make a true apprehension of this possible? It cannot be anything other than *understanding* (σύνεσις). For *synesis* is "the faculty of opinion for the purpose of judging of what some one else says about matters, with which *phronesis* is concerned,"[15] and is the fundamental function which makes both *phronesis* and *episteme* intellectual virtues. But *synesis* is not theoretical but practical because it is concerned with the *correctness* of judgement and not the *truth* of knowledge. *Understanding* (σύνεσις) is used in the sense as the *goodness of understanding* (εὐσυνεσία) for the same reason. At the same point, Aristotle says: "*synesis* is about the same objects as *phronesis*; but *synesis* and *phronesis* are not the same. For *phronesis* issues commands since its end is what ought to be done or not to be done; but *synesis* only judges." But we must not take these faculties for two species under the same genus. *Synesis* is, as above stated, one of the faculties of practical judgement pertaining to *phronesis*. Therefore, the more suitable term to express such a relation may be called *judgement* (γνώμη) which means "the right discrimination of the *equitable* (ἐπιεικές)"; so far as *gnome* acts as right discrimination, it is synonymous with *synesis*, but so far as it is concerned with the equitable, it resembles *euboulia* closely. For equity is not an absolute but concrete justice, the equitable is just, but not the legally just, but a correction of legal just, and it corresponds to "the rightness with regard to the expedient-rightness in respect both of the end, the manner and the time." As long as *gnome* is the right discrimination of what ought to be done, it becomes *sympathetic judgement* (συγγνώμη) with deliberation and understanding. Here we may find sufficient reason to assert that a man of practical wisdom is excellent in deliberation and also a man of understanding has sympathetic judgement.

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[11] L. H. G. Greenwood, *Aristotle, Nicomachean Ethics*, Book VI, with essays, notes and translation (Cambridge, 1909), p. 37.

[12] *Ibid.*, p. 60.

[13] *Eth. Nic.*, VI 5, 1140 b 4—6.

III

Now that the general character of Aristotle's *phronesis* has been analysed on the basis of explanations given in the *Nicomachean Ethics*, Book VI, we can grasp the part to be played by that *habitus* in the practical syllogism as applied to express the logic of will and action. Strange to say, however, the philosopher who works out the laws of *Analytics*, theoretical syllogism, touches only on practical syllogism in the *Ethics* and *On the Soul*, as if it were a problem already sufficiently discussed. *On the Motion of Animals* which must be attributed to a student of the Aristotelian school rather than to the Stagirite himself as credited, discusses this point as follows:

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[14] *Eth. Nic.*, VI 5, 1140 a 25—28.

[15] *Eth. Nic.*, VI 10, 1143 a 14—15.

"But how is it that thought is sometimes followed by action, sometimes not, sometimes by movement, sometimes not? What happens seems parallel to the case of thinking and inferring about the immovable objects of science. There the end is the truth seen (for when one conceives the two premises, one at once conceives and comprehends the conclusion), but here the two premises result in a conclusion which is an action ...... for example, one conceives that every man ought to walk, one is a man oneself; straight way one walks; or that, in this case, no man should walk, one is a man; straight way one remains at rest. And one so acts in the two cases provided that there is nothing in the one case to compel or in the other to prevent. Again I ought to create a good, a house is a good; straight way I make a house. I need a covering, a coat is a covering; I need a coat. What I need I ought to make, I need a coat; I make a coat. And the conclusion I must make a coat is an action. And the action goes back to the beginning or first step. If there is to be a coat, one must first have B, and if B then A, so one gets A to begin with. Now that the action is the conclusion is clear. But the premises of action are of two kinds of the good and of the possible."[16]

As Grant has pointed out, practical syllogism may be divided into two froms:

(1)	Major Premise.......	Such and such an action is universally good.
	Minor Premise.	This will be an action of the kind.
	Conclusion.	Performance of the action.
(2)	Major Premise.	Such and such an end is desirable.
	Minor Premise.	This step will conduce to the end.
	Conclusion.	Taking of the step.[17]

But these forms are really coincident with each other; as the good is always desirable and the end itself, the major premise may be said to contain the *logos of an end* which implies a general principle. As any particular act is an application of such a principle and the means necessary to the realisation of an end, the minor premise may be said to represent the *logos of the means* toward the attainment of such an end. Hence, the application of the minor premise (the means) to the major one (an end) leads to the conclusion (performance of the action).

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[16] *De Motu Anim.*, VII 1, 701 a 7.

[17] A. Grant, *op. cit.*, Vol. I, p. 263 ff.

Now what kind of function does practical wisdom play in practical syllogism? *Phronesis*, as we have proved, is above all an *excellent deliberation* (εὐβουλία). Aristotle treats *deliberation* (βούλευσις) in the *Nicomachean Ethics* as follows: "We deliberate not about ends but about means. For a doctor does not deliberate whether he shall heal, nor an orator whether he shall persuade, nor a statesman whether he shall produce law and order, nor does anyone else deliberate about his end. They assume the end and consider how and by what means it is to be attained."[18]

It can be said therefore that *phronesis*, in respect to excellence in deliberation, expresses the *logos of the means* and belongs to the minor premise; such a faculty of *phronesis* is called *cleverness* (δεινότης). For "it is such as to be able to do the things that tend towards the mark we have set before ourselves and hit it."[19] Hence we call men of practical wisdom clever; practical wisdom cannot exist without this faculty.

But to get a right judgement in the minor premise, we must clearly understand the major premise. In other words, it is impossible to be practically wise without being good. For the major premise which regulates moral principles is understood only with the aid of virtue. We call that which expresses the *logos of an end* right reason (ὀρθὸς λόγος). But what is the relationship between practical wisdom and right reason?

"Now the right reason is that which is in accordance with practical wisdom. All men, then seem somehow to divine this kind of state is virtue, viz., that which is in accordance with practical wisdom. But we must go a little further. For it is not merely the state in accordance with (κατά) the right reason but the state that implies that presence of (μετά) right reason, that is virtue; and practical wisdom is a right reason about such matters."[20]

We can not however draw the conclusion from this much-disputed quotation, that right reason and practical wisdom are the same; we must rather assert that the former has the imperative (ἐπιτακτική) character of the major premise and the latter, the judging (κριτική) character of the minor premise. Being unified by practical reason (νοῦς πρακτικός) which underlies functionally practical wisdom and right reason, these premises lead to the determination of will or the choice of purpose (προαίρεσις).

Thus we have arrived at the conclusion on Aristotle's theory of practical wisdom. In the *Protrepticus* written in his academic period, practical wisdom was synomymous with theoretical, as it was with Socrates and

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[18] *Eth. Nic.*, III 3, 1112 b 11—15.

[19] *Eth. Nic.*, VI 12, 1144 a 24—26.

[20] *Eth. Nic.*, VI 13, 1144 b 21—28.

Plato; and the traditional formulae of *φρόνησις = νοῦς = ὀρθὸς λόγος* was still preserved. But Aristotle in the *Eudemian Ethics* expressed his critical reflection on the trascendental method. In the *Nicomachean Ethics*, he made distinction between practical wisdom and theoretical wisdom for the first time and showed the logical relation between practical wisdom and right reason in the formulae of practical syllogism. This problem offers us a great deal of lessons, but unfortunately the creator of classical logic failed to complete his theory on the logic of action.

SECLUSION, JAPAN'S TRAGEDY

By KOICHIRO MURAMATSU
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I

As a result of the tragic end of World War II, there inevitably has taken place serious self-examination among us Japanese people. We feel within ourselves the development of a new mental attitude, a new outlook on man and the universe —— a reflection of the current social renovation born of a series of reformatory legislation including the new Constitution. An important aspect of this spiritual transition is that we have in our minds a new and acute consciousness of the difference in character between the Japanese and European mentalities, and that the adoption of things European has become to us the problem of the time. We do not mean by this such superficial issue as the aping of Western, especially American, customs and manners which are swaying society in general. The reception of the culture and spirit of the West began about a hundred years ago. Since then Japan has been marvelled at by other countries, because as a new nation of the Western type culture in East Asia, she has made such rapid progress. And yet, the Japanese are finding themselves once again engrossed in the adoption of things Western, with more vigor and seriousness than ever. What are the reasons? One of them is that the Japanese people, in response to the changes in the social structure and the shifting of balance of social influences that has resulted from the latest renovation, have begun to take interest in things Western from a different angle and a new mental outlook. But the more important is that today those who fathomed the depths of the Japanese spirit in its realities during the wartime tension and who consequently felt the vital need for serious reflection on it are facing the opportunity to review both the Japanese and the Western spirit with more profundity than the people of former did. It has often been pointed out that there exists a basic difference between the spirit of Europe and the spirit of Japan or the Orient —— a basic difference in mental attitude and view of the world. One Chinese scholar[1] has written a book entitled *Why China Has No Science?* This question echoes the recognition of this difference and a sort of yearning regret resulting from such recognition. It is quite natural that the Japanese engaged in serious self-reflection since the war's end should turn their eyes again to this matter with a new meaning and greater profundity than ever.

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[1] Yu Lan-Fung

Mr. Tetsuro Watsuji, noted scholar of ethics and the history of the Japanese spirit, published a work in the spring of 1950, in which he made a scientific study of this subject from an intersting angle. His work was entitled *Seclusion, Japan's Tragedy.* Historical studies of Japan in seclusion during the sixteenth and seventeenth centuries are not scarce, nor studies that enumerate the various effects, advantages and disadvantages, of seclusion on Japan manifested in various social and cultural phenomena are lacking either.[2] But the latest work by Mr. Watsuji differs pretty largely from all these in the treatment of the subject. It is born out of the self-reflection that the Japanese people were driven to during and after the World War II. He holds that the spiritual deficiencies of the Japanese people that were bared during the late war have their root in the lack of scientific attitude and a propensity to value intuition more than reasoning. And he finds this deficient trait of the national spirit can be traced back to three and a half centuries ago, when the leaders of Japan shut their country to the rest of the world. To the time when Europe, awakened to the spirit of discovery and of scientific enquiry into man and Nature, had just begun to extend its hand to Japan through missionary work; when the Japanese people, unsatisfied with continuing their traditionally lethargic life, were striving to get to a deeper layer of spiritual life, and therefore, were ready to welcome and absorb the spirit of Europe; when virtually the same social conditions as today existed in this country and the people were forced to do self-reflection. According to him, the spiritual shortcomings of the Japanese people today should not be regarded, as often they are, as the after-effects of her seclusion or as the effects arising from the conditions of this country after she was secluded. Rather, they should be regarded to originate in her very action of secluding herself. The action was tragic; having been brought into contact with the positive, scientific spirit and the spirit of self-expansion of Europe and having begun to absorb them, Japan had the opportunity to advance in the same direction with Europe, but she finally relinquished it of herself through seclusion. That is why Mr. Watsuji subtiles his work *Japan's Tragedy.*

According to Mr. Watsuji, he knows no one among Japanese historians who treats the historical issue of "seclusion" in the same manner as he does. This view may be objected to, for other historians have made the same kind of studies as his, so long as the facts and process of seclusion in Japan are concerned. Basically, however, Mr. Watsuji is right in his contention. For in Seclusion he not only makes use of historical sources in new combinations and from an entirely new angle, and presents unique ideas and interpretations alien to other historical works, but also, with the spiritual crisis experienced by present-day Japan on his back, penetrates through the surface strata of historical data into their dark spiritual basis. Herein is found the uniqueness that places *Seclusion* above a mere historical work ; it is a book that shows what problems the Japanese people are facing today. In this article, this writer seeks to give a brief sketch of *Seclusion, Japan's Tragedy* and some of his own views in regard to this subject.

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[2] e. g. Zennosuke Tsuji, Relative Advantages of Seculusion, *History of Japan in International Communication,* revised ed. (in Japanese, Tokyo, 1930).

II

Compared with the same category of work, *Seclusion* is noted for its novelty of arrangements in the first place. The conditions that led Japan to seclusion, including Christian missionary work by foreigners, constitute Mr. Watsuji's main discussions, but he precedes them with a big Part I in which he gives colorful descriptions of the discovery of new sea routes and new continents by Portuguese and Spaniards, and this Part I itself has a long introductory chapter reviewing the spiritual conditions of Europe that gave rise to these explorations. This shows that his historical eyes, instead of being led by mere factual links of phenomena in Japan, are glued on discrimating between the spirits of two cultural spheres of Japan and Europe through the investigation of their spiritual contact and conflicts. For this reason, the author in Part I concerns himself primarily with discussions, going beyond the scope of factual links to the seclusion of Japan, on the conditions leading to the formation of the European cultural sphere and the peculiarly European spiritual movements arising therefrom, with the widening of the mental horizon of Europe symbolized in the movement for exploration as the main theme. Even in dealing with the circumstances that led to the formation of the European cultural sphere, the author likewise lays emphasis not only on the spiritual and social conditions of the Germanic cultural sphere but also on other cultural areas of a conflicting nature ; he attaches great importance to the effects resulting from the contact between the Germanic and Islamic cultures.

After the Roman Empire collapsed, the Germanic world came into being in the West. While the latter had been going slowly through its first stage of development over the long period of the fourth and fifth centuries to the twelfth and thirteenth centuries, under the leadership of the quasi-ancient Christian church rather than on its own, the cultural spheres of Byzantine and Islam developed in the East, and the rapidly-attained mellow ripeness of the latter culture and the rapid expansion of its sphere of influence in particular brought a tremendous effect on the growing medieval culture of a Christian and Germanic world. The West had a great deal to learn from the East concerning the formation of a feudalistic society centering on the knight, the establishment of the teachings of the medieval church based on the adoption of Aristotelean philosophy and the advance to the Mediterranean commerce of the Germanic people led by the Italian city-states. The consciousness of the unified West, on the other hand, was born as a strong consciousness of resistance against the penetration of the pagan influence from the East.

This Eastern influence was especially marked in Iberian states neighboring on and invaded by the Islams. For instance, the adventurous and fervently religious spirit of the Islamic knight first found its way into the martial spirit of the Germanic people that lived in the Iberian peninsula. On the other hand, there inevitably sprang up in this region a strong spirit bent on conquering the Pagans and restoring the lost territory. The infused spirit of the Islamic knight, spreading to various countries in Europe, later flowered in the knighthood of the Middle Ages, while the original Germanic spirit that resisted against the Pagans developed into the Crusade on an all European scale. As a matter of fact, it was during the Crusade that the West's consciousness of resistance to the East finally crystallized into the consciousness that Europe existed as a unified cultural sphere.

The unified culture of the Middle Ages supported by the universal rule of the Catholic church and the doctrines developed out of the teachings of the church was broken up under the new forces rising toward the end of the Middle and at the beginning of the Modern Ages. The martial spirit of the knight, tamed by the teachings of the church, gave a foundation of the spirit of adventure and the spirit of pursuit of the limitless in the movements of an age which, turning its eyes from the truths of Heaven to the realities of the earth, sought to discover therein a new world and new life. The revival of the ancient culture and the resultant re-emergence of a scientific and rational spirit jointly shook the foundation of the old view of life and the world woven into the doctrines of the church. The resistance of the national state against the Papacy and the revolt of the rising citizenry against the nobility and knighthood that had become degraded and disorderly —— all such revolutions against the rein of tradition provided necessary social basis for the movement for rationalization of the spirit. The rise of these new forces full of vigor and the resultant confusion in society brought about a new age —— the Renaissance, the age of discovery of Nature and humanity by talented individuals with superb insight and original power of expression and execution.

A new spirit of Europe thus came into being. As an expression of this spirit, the world was explored geographically at the outset of the Modern Times and the mental horizon of Europe was widened to cover the whole world. The author is primarily interested in these facts in relation to Japan of the same period. He expounds that, viewed from a spiritual angle, there exists close connection between these events and those that had led to the formation of the European cultural sphere and the peculiar spirit of Europe arising therefrom. The old spirit of the Crusade, the spirit of conquest over the East and of resistance against the Pagans, combined with the newly aroused interests in the Far East, as introduced by Marco Polo and others, and its commercial lures, in setting the European people on the road of exploration to the East. To flank on both sides the pagan influences of the Arabians and the Turks, attempts were to be made, taking advantage of the Christian world considered to exist in the East and also extending missionary work to create there new Christian worlds. In these attempts, the vanguard was assumed, in place of the Italians, by the Iberians, who had been brought up in resistance against Islam. In Portugal, we see the spirit of navigator Henry, who staked everything on the expansion of mental horizons in the scientific and experimental spirit of the Renaissance, guiding the people in all their attempts at discovering the sea route to India, making all the energies expended on the opening of navigation routes for spices trade, on the acquisition of overseas territory as well as on the counter-reformation missionary movements, flow with it in the same direction. The Spanish were stirred by a more knightly spirit of conquest and acquisition. Even at the time when they made the accidental discovery of the American continent by the adventure of Columbus, their object was to discover a western route through which to reach the countries in the East which they still regarded as a world counter to theirs. As a matter of fact, they mistook the newly discovered land as a part of the old Eastern world, and at once took to conquering, acquiring and colonizing it. At about the same time, King Manoel I of Portugal was having South America which had been known to the Portuguese since Cabral's discovery, explored and investigated, having commissioned Amerigo Vespucci to go on the expedition. Here we see at work the spirit guiding the Portuguese in their expeditions, different from that guiding the Spanish, or the spirit of Henry, the navigator. Herein lies the reason why the honor of discovery and naming of the New Continent was reserved for Vespucci, despite the fact that Columbus was the first to discover it. However, both these Iberian countries contributed alike to the widening of the mental horizons of Europe. The fact is best symbolized in the first round-the-world navigation achieved by the Spanish fleet under the command of Magellan, the veteran Portuguese navigator who once joined the Indian expedition.

Written from the basic point of view stated above, Part I of *Seclusion* entitled "Formation of a World-wide Horizon" tells of the difficulties the Portuguese encountered in their attempts to discover a navigation route to the East, of the establishment of their colony in India and the state of the missionary work going on in the Eastern countries in parallel with it at the hand of the rising Jesuits, and thus traces the gradual expansion of the mental horizon of Europe toward the Far East. It also tells the history of the establishment of colonies in America by the Spaniards, and describes with vividness the processes by which the westward expansion of the same geographical horizon, getting based on the new Continent, finally came to meet with its eastward expansion advanced by the Portuguese and together placed the whole world under one mental horizon encircling it. Japan too came within the pale of the eastward advance of the European influences, through Portuguese traders, the first of whom was drifted on her shore in 1542, and through Francisco Xavier, one of the Jesuit church founders and other missionary workers who followed in his steps. To speak more basically, the new human spirit born in Europe after the Renaissance knocked at the door of the Japanese spirit, in the form of scientific spirit and the spirit of pursuit of the limitless.

Part II of *Seclusion* entitled "Japan at the Outset of the Modern Age, its Situation in the World-wide Horizon" first deals with missionary activities by Xavier and his Portuguese successors, which were centered on Kyushu and the Kyoto-Osaka area, together with the movements of Portuguese traders who followed in their wake. It describes the activities of the Spanish missionary group who sought contact with Japan in competition with the Portuguese and also the activities of Spanish, Dutch and English merchants in Japan. And leading from this train of events, it tells very concretely how Japan responded to them, solving vigorously the problem of contact with the rest of the world at that time, and yet why Japan finally chose to isolate herself from the European movements for the expansion of mental horizon by adopting a retarding policy of seclusion.

It is worthy of note that missionaries including Xavier at once pinned hopes and expectations on Japan as a country with a greatly promising future when they first arrived in this country to spread the teachings of Christianity. These foreign missionary workers were able to get permision and aid with comparative ease from the local feudal lords in Western Japan who eagerly sought to invite foreign traders to their territory because of commercial profits involved. In that age of wars between lords, of wars of survival —— arms, ammunitions, aid, both direct and indirect, that were available in time of war from missionaries and foreign traders that followed them, were big enough lures to these feudal lords. The Jesuit missionaries, on the other hand, deliberately followed their customany policy with success which brought ill-fame upon them in Europe in later days, the policy of protecting their own positions through a close tie-up with those in power in whatever country they might be. But the primary reason why they considered Japan as a country full of hopes was more profoundly human. After a long itinerary along the coasts of the Orient, they arrived in Japan and found that her people were superior to others. To the Jesuits it seemed that the Japanese people respected honor, hated falsehood, had an open heart to accept a new religion and wisdom to judge its teachings. Furthermore, once converted to Christianity, the Japanese demonstrated their spirit of self-sacrifice and of faithfulness to their teachers. All these national traits of the Japanese convinced the Jesuits that they had arrived in a country full of hopes. Their conviction was justified by their subsequent success in missionary work and the devotion of the converts they witnessed in the course of the work. Under the protection of feudal lords in the Kyushu district at the beginning, and later of Nobunaga Oda, who was gradually gripping the political power of the country, the Jesuit missionaries steadily expanded their sphere of influence. As a result, their followers rapidly increased in number, in all strata of society, ranging from influential lords and distinguished warriors down to peasants, fishermen and urban people in general, not only in Kyushu but in Central Japan as well. Churches, seminarios and collegios designed to educate converts and ministers were established in important centers of the country.

Political unity attained by Nobunaga by force was inherited and completed by Hideyoshi Toyotomi. But after 1587, Hideyoshi placed a ban on the propagation of Christianity in the country and started the persecution of the Christians. For all this, however, a large number of people maintained their faith under the leadership of the missionaries who had gone underground ; also they were constantly joined by new converts. Ukon Takayama, a trusted lord of Hideyoshi, gave up his territory at once without any regret, when called upon to choose between it and his faith. The wife of another lord (Gracia Hosokawa), in defiance of the ban, which did not allow her to attend the church herself, made her lady in waiting, who had joined the faith already, learn the rites of baptism and was baptised at her hand.

Ieyasu Tokugawa who laid the foundation of the Shogunate that lasted 265 years also officially prohibited Christianity in the country. But until the beginning of the seventeenth century, Christian influences prevailed in the country, chiefly because the control was tolerant, as seen from the fact that the converts numbered 750,000 in 1605. The spread of the Christian faith, however, gave Ieyasu considerable misgivings and led him to resort to the persecution of its followers in his later years. In the days of his successors, the control grew increasingly rigid and persecution severe but the zeal of the followers over their faith grew correspondingly great. In 1637, when the Christians in a corner of Kyushu rose in revolt against the lord of the district who was notorious for his cruel administration and relentless enforcement of the ban on Christianity, the rebels gathered an army of 65,000 soldiers, and the first commander in chief of the Shogunate forces had to die in action. Though we have to take it into consideration that the Christians were aided by warriors who became lordliness in the newly unified government of the Shogunate and hated it, yet the whole thing is enough to show how strongly rooted was this new religion among the masses despite the long years of persecution.

Herein apparently lies the reason why the author of *Seclusion* is especially interested in the events of the so-called Christian movement in the olden days. He objects to treating this important historical fact as an episode added to Japanese history from outside, as has been customarily done by Japanese historians. He also rejects the view of this movement held by Japanese people in general, in whom the interest in this movement is linked to the exoticism they feel for the things brought from abroad to this island country at that particular time by accident. Instead, he holds, no doubt most rightly, that the propagation of Christianity in the early days by the Portuguese was in fact a voluntary movement on the side of the Japanese, especially the masses, who sought to be awakened to the new human spirit, and that the movement was symbolic of the Japanese spirit that reached out a hand of welcome to the spirit of Europe that extended its feeler as far as Japan seeking to expand its own mental horizon.

The author explains why there were such primary mental conditions of receptiveness among the leaders and masses, but more especially the masses, of Japan, and yet what was still lacking in these conditions, through a brief review of Japanese history. About the same time, when in the west the Germanic world began to shape itself under the influence of the Roman culture and civilization, Japan too began to benefit by the ancient culture of China, and, by absorbing especially the culture of the Tang Dynasty through the seventh to the nineth century, had accomplished a semi-ancient culture of her own, at least in the court and the Buddhist-circle. When the Crusade was in progress in Europe, then also, there was an analogous spiritual movement going on in the East ; that is, the imported alien culture gradually saturated and was assimilated by the Japanese race. Out of this spiritual movement was born the culture of the Kamakura period, centered on the *samurai-* or knight-circle who had remained until then outside the court culture. In the sphere of religious awakening, for instance, there sprang up in Japan, parallel and contemporaneous with that in Europe, a movement for reformation of religious life, based on the inwardness of the personal belief. In the case of Japan, however, she lacked the stimulus of contacts and conflicts with military and aggressive alien races and with aggressive alien culture spheres, which aided Europe in acquiring her self-consciousness and led to the birth of the spirit of self-expansion and conquest of the East. The result is the closedness of the Japanese spirit ; it lacks impulse to expand outward. Toward the end of the Kamakura period, Japan was attacked by the Mongolian Empire and had her first experience of a fight against military alien race. But this produced no more result than the restoration of the Imperial regime at home, lasting only a short time.

However, in the fourteenth and fifteenth centuries, just at the time when Europe was witnessing the liberation of the human spirit at the end of the Middle Ages and the beginning of the Modern Age, and the active social shake-ups that followed it, Japan too saw, almost parallel with those events, the collapse of the unified regime of the Ashikaga Shogunate, independence of feudal lords from the central government, and the beginning of the so-called "age of wars", the age of *bellum contraomnium* between lords and grandies. Such wars culminated in the rise of new territorial powers and of some communal cities, all of them new formation of an age unfettered by tradition and social status. Popular communal riots, of farmers and large religious sects, that recurred in Japan in those days were similar in nature to those that cropped up in Europe. Sometimes, a whole province rebeled against its military ruler through a popular conjuration (*kuni-ikki*). In those days, on the other hand, there were Japanese adventurers and pirates called by the Chinese "*wa-ko*" or Japanese invaders who were engaged in plundering along the coast of Korea and China and as far as the South Seas area. To stop ruthless activities of the nation's overseas advancing spirit, that was scarcely regulated by the policy of the Government, the government went into treaty with China, under which the latter issued and regulated licenses to the ships engaged in trade with China (*Kango trade*). All these show that there were being born at that time a new spirit among the Japanese, and that they were seeking a new world for themselves. They opened their eyes for the first time to foreign countries, and went out daringly as far as the China Sea and the Indian Ocean, with a positive spirit of adventure. Francisco Xavier met with a loafing Japanese named Yajiro in Malacca, and learning about Japan from him for the first time, resolved to propagate Christianity in Japan. Thus the spirit of Europe that had been bearing down upon the East found the Japanese nation who were in mental conditions of respectiveness.

But, in this case too, there was something lacking in their receptiveness. Although the same popular movement for autonomy as in Europe was carried on in Japan for a time very vigorously, it failed to accomplish anything lasting. Unlike in Europe, it did not give birth to any city-states or autonomous towns, and even those autonomous organizations that had survived were later turned into sub-agencies of the police administration by the government. The advance abroad of the Japanese was a spontaneous out-flowing of the energy of the nation, and was entirely private in character ; it had nothing of a public enterprise conducted under a state plan ; it had not a vestige of the scientific spirit of exploration. Consequently, the activities of the Japanese abroad contributed but little towards widening the mental horizons of the people at home. For all that, the minds of the Japanese in general at that time could be said to have been sufficiently receptive to the spirit of Europe exemplified in Christianity, for the reason that, having passed through a critical age, the age of wars, they were now seeking to grasp a new human spirit freed from traditions and conventions, as well as a new view of the world.

Nobunaga Oda, the most powerful and influential of the lords in those days, had been pushing forward step by step the work of unifying the country by force of arms. Ruthless destroyer of tradition, he possessed a mental capacity to see beyond the mental horizons of the ordinary Japanese lords. He was a leader in whom the sense of the crisis of the times, or the sense that the times were standing at a turning point, was the best realized. To him Christianity was no concern as a religious issue, yet he took interest in it as a window to let in fresh air from the wider world outside, and promised the missionaries propagating this new religion friendliness and protection. Under his protection the missionary work secured a foothold in the center of the country, and also achieved a steady success in the southwestern provinces. This situation continued until the early days of the period of Hideyoshi Toyotomi, Nobunaga's successor, when, the influence of the new religion steadily gaining ground, an increasingly large number of powerful lords joined the faith. But as political unity was finaly accomplished by Hideyoshi, the age of social revolution, the age of disrespect for tradition, free competition among abilities and subversion of precedence i.e. ousting of the superior ranks by the inferior, was put an end to ; and now, to maintain their established positions, the newly-risen potentates and ruling classes sought to keep order in society by making traditions and conventions once again rule the life of the people. As for Hideyoshi, he did not much bother about the new religion as such, nor about its spiritual possibilities. He rather wanted to get through the hands of the missionaries arms and warships with which to augment his power. So it was no wonder that, alarmed at the wide spread of the new religion among all classes of people, or at the spirit of Japan rising to meet and welcome the spirit of Europe, and, more particularly, out of anger with those missionaries who were reluctant in assisting him in getting warships, he should have suddenly issued a ban on Christianity, and that, later when the rumour reached him that missionaries were all agencies of invasion sent out by their governments, he should have started persecuting them. Ieyasu Tokugawa held a similar view regarding traffic with Europe ;

he too saw in it a means of enriching and strengthening the country. So, although both banned open propagation of Christianity, neither prohibited coming to Japan of foreign traders. As for Ieyasu, he even tried to do everything in his power to promote trade with the outside world. However, the founder of the Tokugawa Shogunate that was to last two and a half centuries, was essentially a conservative ; his first and foremost concern was to keep order in society. So, Ieyasu designated the study of Confucianism as the official study, and by reorienting the *samurai* class to the conservative ethics of this age-old Oriental philosophy, instituted a spirit that would confront and combat the spirit of Europe and the new spirit of Japan that, bent upon the destruction of tradition, had welcomed it. Out of the confrontation of this conservative spirit with the tenacious underground activities of the Portuguese ministers and their Japanese followers and the ill-conceived machinations of the Spanish monks who had sneaked into this country, arose a tension, which, added by the impatience the difficulty of persecuting a religious faith always causes in the persecutors, caused the ban on Christianity to be made more and more severe. The situation continued until the orders issued in 1635 and 1639 that placed a ban on the Japanese going and coming back from abroad as well as on trade with all European powers, except through one narrow channel left open or through the hands of Chinese and Dutch merchants at Nagasaki [3], completed the national structure of seclusion. Thus Japan voluntarily gave up her first chance of participating in the widening of the mental horizons of the world and going ahead in steps with the European nations in the development of the modern spirit. Herein lies the tragedy of Japan in the sixteenth and seventeenth centuries, and herein also lies the origin of the Japan's tragedy today . . . These are a summing up of Mr. Watsuji's contentions.

III

The writer wishes to conclude this article by noting down a few of the impressions he received from reading this book, and also a few of his own views on the subject treated in it. Firstly, Mr. Watsuji's original way of taking up the subject and his sensitive reaction to the realities of the Japanese mind today constitute the great merit of *Seclusion*. This the writer pointed out at the beginning of this article.

Secondly, the authors view of history and his historiological method shown in this book offer us various valuable suggestions. In the preface to this book, the author defines the meaning of the title "Seclusion" and says that it means "the action of secluding a country", not the state of things in a country secluded. This definition which is not necessarily very clear contains, as far as the writer sees, two meanings which are fundamentally different from each other, though they both fit the contents of the book. The one is that what the author treats in this book is not the condition of Japan after she was secluded, but the historical development of the transitional age heading towards seclusion. In this connection, the definition refers only to the boundaries of the subject he treats. But the other is more important; here, the definition refers not to the subject treated but to the attitude towards history of the author himself. The author sees history not in terms of state of things but in terms of action. What this means must be construed from a perusal of the whole of this book.

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[3] The orders provided only that all Portuguese should be ordered out of the country and no more of them be allowed to come in. But there had been no Englishman or Spaniard coming to Japan for a long time ; there were only Dutchmen competing with Portuguese in trade with Japan.

It is customary among our historians to treat the seclusion of our country simply as a causal chain of facts in the past. Even when they discuss its meaning, for instance its advantages and disadvantages, the sense of value which is the criterion of meaning is assumed to be self-evident, and it is explained simply as what is due to facts as such. The author, on the contrary, first states clearly his own personal view of history with which he sees the seclusion of our country, or the point of view of history all his own from which he regards the action of Japan today and the similar action of Japan in seclusion as tragedies. And from this point of view, he clarifies the meaning of Japan's seclusion and expresses it not as a causal chain of facts but rather as a teleological entity. While other historians regard historical facts as things of the past, dead ashes, so to speak, which lie there simply waiting for their causal relations and the meaning they once had to be explained, the author of this book regards them as something different. He moulds them into a number of historical elements, according to their contribution to the historical development as he sees it. The movement for the expansion of mental horizon of Europe is an instance of such historical elements. The Japanese spirit that reacted to it, either as a force that welcomed it in order to liberate itself and grasp a new world, or as a force that tried to suppress it in order to maintain its own established position, and thus created new history is another. This means he sees historical facts as living forces. To the author, the field in which functions the spirit which is the force that ever creates new history, —— that field is history. Seen from this point of view, history is not a mere causal chain of established facts. It is the action of choosing and realizing one single course of history out of all theoretically possible courses, of which there are many. In other words, history is action that realizes history.

Apart from whether the above interpretation is what the author himself, if called upon, would have made, there is no doubt that such attitude towards history is appropriate to the experience of the people of Japan today, and to the problems of historiology of today. We have lived through an age of confusion and violent changes, and in the midst of the collisions of conflicting forces, we have often seen history choose its course and advance in directions different from those that looked theoretically more rational. We have seen the point of view of history quickly change in a short period of time, and history-books demanded to be rewritten. The days are now gone when historians could assume their point of view of history to be self-evident, and all that they had to do was to seek factual accuracy.

The same problems of historiology as we are now faced with must have been already faced with by people after the end of World War I. At that time, too, there was talk about the crisis of historiology. As a matter of fact, there was noticed among the people distrust of the established view of history, due to the same sudden change and confusion of the sense of historical value as we have experienced, and also loss of interest in historiology arising from the same cause, among the younger generation. Even from such crisis, however, historiology as a specialized science and its objective, critical method did not seem to suffer any effect at all, no doubt because the people at that time were convinced, as we are now, that these are the necessary foundation for right historical perception. But it is one thing to have such conviction ; and another to assert that, in order to build up history which is based on factual accuracy and yet captivates the minds of the present generation, it is enough to rely upon established methods and established point of view of history. This book offers various valuable suggestions to those people who are concerned about these problems.

Thirdly, the writer wishes to make a few comments on the contents of this book. According to the author, the constituent historical elements of the European spirit, which acted as the driving force behind the movement for the world-wide expansion of the European mental horizon, and which acting as such spread itself to all parts of the world, are : the spirit of conquest of the Crusade, the knightly spirit of adventure, the spirit of pursuit of the limitless ; the scientific spirit and the spirit of discovery of the Renaissance, and the spirit of liberation from the established view of man and the world that resulted from them. And he takes up the contact and conflict between such spirit of Europe and the spirit of Japan as the main theme of his study. Probably his consciousness of the fact that the same theme is being repeated in the same refrain in the spiritual world of Japan today is what has made this book more than a mere study of historical facts. As the author knows well, however, with the developments in the spirit of Europe over the period of the sixteenth and seventeenth centuries to the nineteenth and twentieth centuries and the corresponding developments in the spirit of Japan over the same period intervening between them, there is a great deal of difference in tonality between this theme played once before and the same theme now being repeated. It is regrettable, therefore, that while the author dwells on the detail of the initial contact between the Japanese and European spirits, he does not write much about its later developments. If he did and clarified his views in this respect too, this book would have had a great deal more to offer us as a work written at the present time.

To make a brief survey of the later developments of the European spirit, during the Renaissance, individual geniuses freely displayed their abilities, and by their power of expressing their untrammelled soul and self, produced great works of art and achieved great enterprises which were all symbolic of the new human spirit. But after the latter half of the sixteenth century there arose, from the Reformation and the counter-reformation movements, an increasingly strong tendency towards the redogmatization of the spirit. The church, new and old, and the court, that cooperated with them conducted the control of thought; sometimes it was done by force. Out of the life in the previous period marked by both individual freedom and lawlessness, were born such historical, sociological forms and institutions as the modern state, capitalism and modern sciences, which are all fundamentally the same, for with each the intention is the domination over the outer world. These institutions and forms getting gradually but firmly established, they forced from outside the frame of activity and method upon the vigorous but licentious spirit of the Renaissance. Although the vigorous activities of the human spirit liberated in the previous period had not yet petered out, there was clearly noticed a transition from the days of freedom and license to the days of stability and restraint, from the days of the progressiveness to the days of conservatism. The two nations of Iberia, which the author regards as the fore-runners in the movement for the world-wide expansion of the European mental horizon, took the lead in this transition under Phillip II. Especially characteristic of this age were the controlling or regulating activities of the modern state, aimed at utilizing human activities in all spheres for the sole purpose of strengthening and expanding itself. At the same time, we must not overlook the tendency of the modern state at this time placing its own land more or less in a state of seclusion to promote these controlling activities. That, too, was characteristic of the age. For instance, we see various countries in the seventeenth century controlling faith and creed and discriminating against pagans. We also see them controlling foreign trade and trying all sort of means to ban the coming and going of foreign ships and traders. Spain forbidding her young people to go abroad and study at foreign universities with a few exception such as Bologna gives an interesting instance of this spirit of seclusion. As for the exploration of the world in which the Portuguese and the Spaniards were the forerunners, it is true it was first started from the spontaneous spirit of adventure of individuals or nations who were inspired with the spirit of the new age. But after the seventeenth century, this too was conducted as political activities of the modern state ; it took the form of the struggle for the acquisition of colonies or of their exploitation as a means of enriching and strengthening the mother country ; and it was generally carried out in a very marked spirit of seclusion. Although in a sense it was an age of suppression of the human spirit liberated in the Renaissance, yet the effects it had on the development of the European spirit were not wholly negative. In their infancy, both the modern state and capitalism, as well as modern science, owed their development to the power of personality liberated within distinguished individuals. But as they reached the stage of stabilization in the sixteenth century, they became independent social forces and as such came to govern and regulate free activities of individual personalities. Those objective social spirits embodied in social institutions became more important than individual originalities. In the seventeenth century, chiefly under the influence of natural science based on the principles of logics and mathematics, men came to be regarded as atoms invested with a psychologically uniform nature, and human society was conceived as a combination of such atoms, its origin and functions being explained rationally and analytically. In this manner was born, in theory at least, the attitude to regard a human being as man in media, and human society as a field of rational actions of individuals. With the turn of eighteenth century, social life became of greater and greater significance. People came to realize themselves as members of society, they felt themselves really as men in media, and to this realization was added the faith that there was in society, which was the field of rational actions of individuals, a natural law of harmony, and that free activities of individuals naturally resulted in the harmony of all. As a consequence, there sprang up once again among the people the spirit that rebelled against the control of thought which suppressed individual freedom, regarding the control and discipline continued by the state since the previous age as unnecessary. The concept of the autonomy of human spirit again cropped up, not as the will that welled up in the minds of distinguished individuals, but rather as the faith of the common people as members of society.

Now such human spirit and concept of society born of intellectual attitudes can be taught to and enlighten anybody through intellect, and can transform things and improve them in whatever manner desired. Out of this new situation broke out a series of social revolution in the later years of the eighteenth century and the first half of the nineteenth century, and that led to the birth of the rights of the masses as men in media, and of the democratic state and liberal society set up with the protection of the rights of the masses as their main object. On the other hand, the development of modern techniques, especially revolutions in transportation, shortened the distances of the world, and this, together with the concept of the equality of men and of the universality of intellect, nursed forcefully cosmopolitanism. The world now came to be regarded as a big society composed of individuals with equal rights or of groups of individuals with equal rights, or as one big community under the rule of the rational human spirit, common to all its members, and of justice and order arising from it. If we can call the exploration of the world in the fifteenth and sixteenth centuries the first day of the creation of the world-wide mental horizon, now it was the sixth ; its creator, the European spirit, saw the fruits of its labor and was satisfied. Yet, in this case also, as in the case of the birth of Eukumena towards the end of the ancient times, the effects the creation of a new mental horizon had upon the human spirit were not wholly felicitous —— for instance, the victory of intellectual attitude, but the loss of spiritual energy ; the elaboration of the mechanism of living, but the loss of self-confidence of the inner-man. With this difference, however, that while the world in the ancient times was a world under the rule by force of one universal monarchy, the idea of Europe is linked to an international society of which the states are members (the League of Nations or the United Nations). This reflects the special situation of modern Europe.

Of course, the rationalization of the state and society was far from complete in the nineteenth century ; they were still manipulated by the will for power of the state or the desire of control of the self-seeking ruling classes. It looked as though the goal of the harmony of all were never to be realized. But it now seems the way to the goal is not utterly blocked. Forced by the horror of the fearful destructive forces released in the last two world wars, and by the oppression of the social forces born of mechanized industrial society, the twentieth century seems to be approaching step by step a new recognition of man and society. Anyhow, there is a vast difference between the spirit of Europe as it was at the time of the first discovery of the world-wide mental horizon made through the power of personality of individual explorers, and the spirit of Europe as it now is.

These are but fragmentary notes ; the writer does not mean to say that he has discussed the matter in question as properly as could be desired, viewing it from all possible angles. But he believes he has made it sufficiently clear to the reader that the spirit of Europe is something that develops, something that changes with the development of history, even if it remains the same in its basic character, in its being a scientific spirit, a spirit of pursuit of the limitless, etc.

Accordingly, if Japan had properly absorbed this spirit of Europe in the sixteenth and seventeenth centuries, when she was still full of naive energies, its effect on her would have been great ; but it is difficult to surmise on this assumption alone, what then would have been the subsequent position of Japan in the mental horizon of Europe or of the world. That it is difficult becomes clear when one looks at the positions in Europe of Spain and Portugal which once spread the spirit of Europe to the East and the New Continent. This fact gives a cloudiness to the view of the author who regards Japan's seclusion as a tragedy.

Also, one must pay full attention to the fact that in the latter half of the sixteenth century and in the seventeenth century, when in Japan there was a growing tendency towards seclusion, nearly the same condition held in Europe —— the predominance of the political interests of the state, the desire for the stabilization of established conditions and a responding tendency towards conservatism, the dogmatization of the spirit, and a similar tendency, though varying in degree, towards seclusion. However, this situation in Europe was no more than a stage of development that culminated in the formation of the new spirit of enlightened man in the eighteenth century. Although the writer is not prepared to pass correct judgements on the history of Japan, he cannot but feel that paying proper attention to this fact provides us with useful suggestions in respect to the meaning of Japan's seclusion. In other words, he wonders whether he might not regard it also as a stage of development, and explain its meaning accordingly. As a matter of fact, when the spirit of Europe reached its hand to Japan for a second time, towards the end of the Tokugawa Shogunate, through the warships of England, Russia, the United States and other countries, Japan made to it a response entirely different from that she had made earlier. The earlier response had been founded on her people's individualistic desires of being converted to a new religion, but this time it was founded on national interests. To illustrate this point, when the officials of the Shogunate sought the opinions of the feudal lords as to how to deal with the demand presented to it by Commodore Perry for opening Japan to foreign intercourse, excepting a small minority of bigoted protagonists of seclusion and theorist for the opening of the country, the majority whose opinion counted made answers, pro and con, all in the light of national interests. Japan in the Meiji era or under the Emperor's government that had replaced the Tokugawa Shogunate soon after the coming of Perry, also absorbed the culture, civilization and spirit of Europe from entirely national viewpoints. As for present-day Japan, she is undergoing, for the first time in her history, a metamorphosis from a power state to a democratic country. Consequently, it is expected the contact between the Japanese and European spirits will show entirely new developments in the future. From this point of view, it seems that Mr. Watsuji's view of Japan's seclusion as an end of a chapter in the book of contact between Europe and Japan, or his description of it as a tragedy is a little too sharp. Or it may be his consciouness of the tragedy today is a little too much reflected in his view of the past.

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